UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,264	02/12/2002	Rajendra R. Damle	CET0006US	5023

33031 7590 04/11/2008

CAMPBELL STEPHENSON LLP
11401 CENTURY OAKS TERRACE
BLDG. H, SUITE 250
AUSTIN, TX 78758

EXAMINER	
PATEL, ASHOKKUMAR B	

ART UNIT	PAPER NUMBER
2154	

MAIL DATE	DELIVERY MODE
04/11/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/074,264	Applicant(s) DAMLE ET AL.	
	Examiner ASHOK B. PATEL	Art Unit 2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01/10/2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) *12 and 23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11, 13-22 and 24-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-37 are subject to examination. Claims 12 and 23 are cancelled.

Response to Arguments

2. Applicant's arguments filed 1/10/2008 have been fully considered but they are not persuasive for the following reasons:

Rejection of Claims Under 35 USC §112

Applicant's arguments:

"The Office Action objects to the use of the term "source identifiers" in Claims 1, 24 and 30 as not agreeing in plurality with earlier use of associating a source identifier with each PDU. Applicants have amended the objected to phrase to reflect "source identifier," in accord with the suggestion of the Office Action. Applicants respectfully submit that this amendment addresses the rejection raised under 35 U.S.C. § 112, and that Claims 1, 24 and 30 are now in condition for allowance. "

Examiner's response:

According to the amendment to the claim, 35 USC §112 rejection is with drawn. However, as such, Examiner does discern that, in essence, only one stream is decomposed as the claim 1 recites.

Rejection of Claims Under 35 USC. §103

Applicant's arguments:

"See, e.g., Claim 1 (amended). Support for these amendments can be found at least in the provisional patent application entitled "Method and Apparatus for Wavelength Concatenated Channel Framing" (60/270,444) which was incorporated by

reference by the original Application on pages 14 and 17. *See also* Resp. to Non-Final Office Action, p.ll ("Formal Remarks")(January 15, 2007). The Appendix accompanying that provisional patent application describes the use and formation of PDUs, source identifiers for PDUs (e.g., Q_IDs) and data frames comprising PDUs. *See, e.g.,* Provisional Patent App. No. 60/270,444, Appendix pp.16-19. Applicants respectfully submit that neither York nor Smith, alone or in combination provide disclosure of all of these limitations."

"The Office Action admits that York fails to provide disclosure of "decomposing an input datastream of a plurality of input datastreams, associating with each PDU a source identifier identifying the source of the input datastream." *See* Office Action, p.6. In order to remedy this deficiency in the disclosure of York, the Office Action relies upon Smith. *See* Office Action, p.7. Applicants submit that Smith fails to provide disclosure of the amended limitation. "

"For at least these reasons, Applicants submit that neither York nor Smith, alone or in combination, provide disclosure of the amended claim limitations of independent Claims 1, 13, 24 and 30, and all claims depending therefrom. Applicants respectfully submit that it is the burden of the Examiner to establish the disclosure of all the limitations of the claims in the asserted references. "

Examiner's response:

<u>Examiner notes that the source identifier for PDUs is nothing but "Q-IDs."</u>

Which is illustrated on page 19 of 60/ 270, 444 as follows:

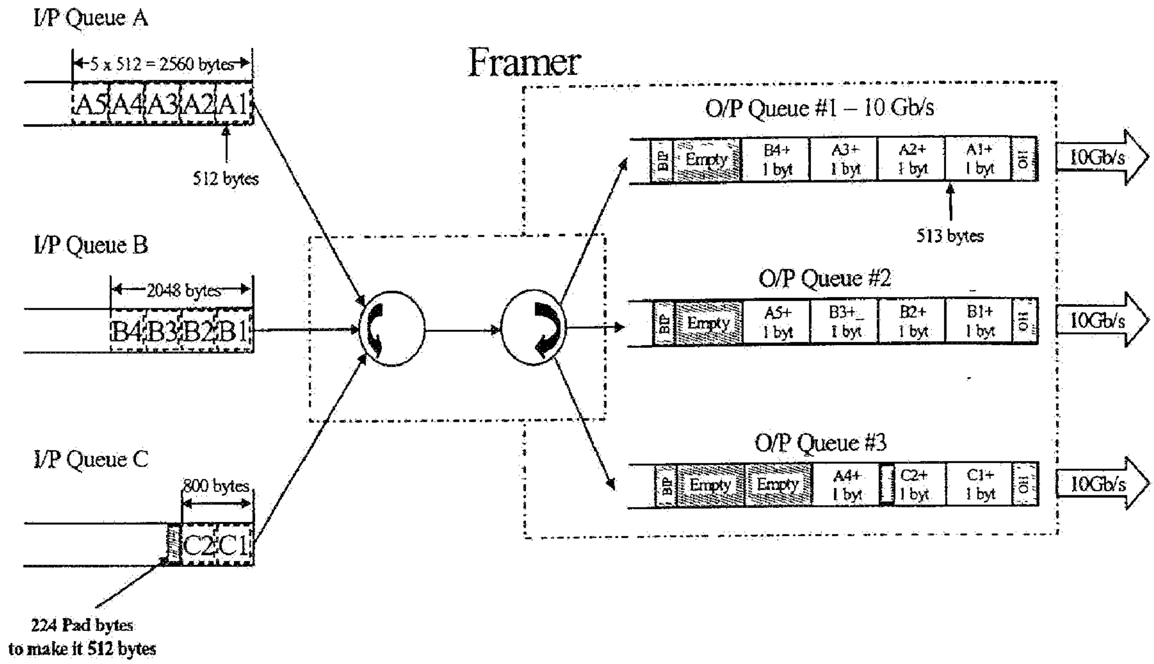


Figure 16 3 input 3 output payload formation example

Smith teaches the following in Figs. 2 and 3:

Figure 2

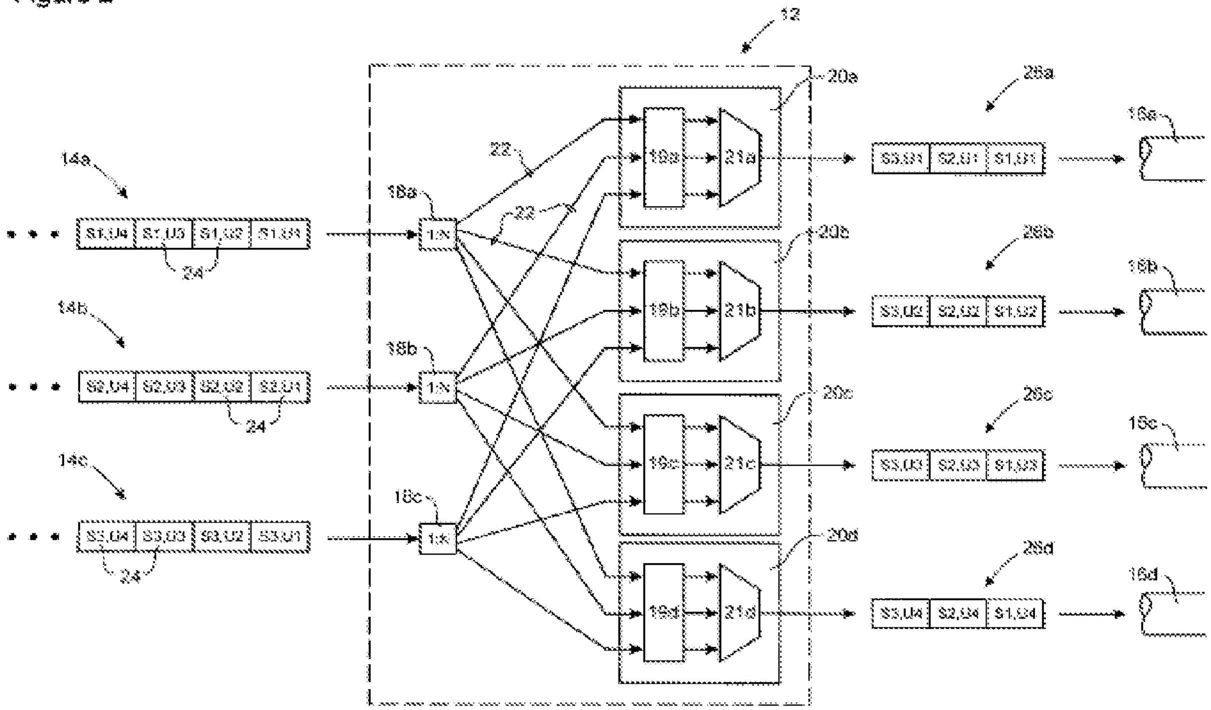
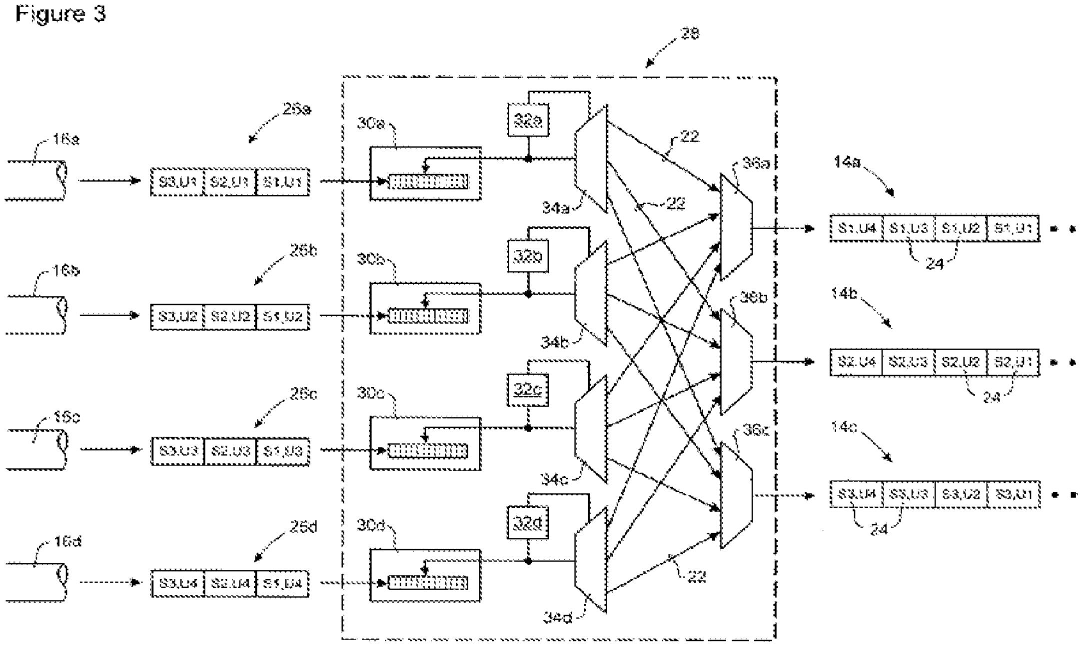


Figure 3



Also Smith teaches at col. 6, line 55-col. 7, line 21, “The signal distribution process described above with respect to FIG. 2 is fully reversible to recover the original data signals 14. FIG. 3 is a block diagram of a signal recovery unit 28, which is implemented in each receiving end node 4a e. The signal recovery unit 28 shown in FIG. 3 can be implemented in hardware and/or software downstream of conventional optical demultiplexing and opto/electrical conversion circuits, which operate to optically demultiplex the channels 16a d from a fiber link 6, and convert each composite data-stream 26a d into electronic form for processing. Conventional clock recovery and signal regeneration circuits (not shown) may also be implemented upstream of the signal recovery circuit 28 shown in FIG. 3.

The signal recovery unit 28 generally includes at least N parallel elastic buffers 30a d, each of which is arranged to receive a respective composite data-stream 26 from one of the channels 16. The elastic buffers 30a d cooperate to de-skew the composite data-streams 26a d, and thus compensate for propagation delay differences between each of the channels. Each of the de-skewed composite data-signals 26a d is then passed to a respective framer 32 and demultiplexor 34. **The framer 32 analyses the respective composite data-stream 26 to detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26,** and generates a synchronization signal which is used to control the operation of the respective demultiplexor 34. Using the synchronization signal, in combination with the known interleaving sequence of the interleavers 20a d, each demultiplexor 30a d operates to demultiplex its respective composite data-stream 26, to recover one sub-stream 22 of

each data signal 14. The sub-streams 22 of each data signal 14 are forwarded (one from each demultiplexor 30) to a one of M multiplexors 32a c which multiplex the sub-streams 22 to recover the respective data signals 14."

Thus as identified in the previous Office Action, Smith teaches to "detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26", as such identified by Smith as shown in Figs 2 and 3 , S1 is an input stream identifier which is a source identifier and U1 is packet identifier which is appended to the PDUs. This is exactly what the Applicant has indicated , which is the source identifier for PDUs is nothing but "Q-IDs."

Applicant's arguments:

"In order for a claim to be rendered invalid under 35 U.S.C. §103, the subject matter of the claim as a whole would have to be obvious to a person of ordinary skill in the art at the time the invention was made. See 35 U.S.C. §103(a). This requires: (1) the reference(s) must teach or suggest all of the claim limitations; (2) there must be some teaching, suggestion or motivation to combine references either in the references themselves or in the knowledge of the art; and (3) there must be a reasonable expectation of success. *See* MPEP 2143; MPEP 2143.03; *In re Rouffet,* 149 F.3d 1350, 1355-56 (Fed. Cir. 1998). "

Examiner's response:

Because York and Smith teaches decomposing input datastreams, one incorporating the invention for " decomposing an input datastream" and the other incorporating the invention for "decomposing the plurality of input datastreams."

The difference of the invention lays into the inventive component they use, “Data Splitter” of York and “The signal distributor unit “ of Smith. Therefore, it would have obvious to one skilled in the art to substitute one method for the other to achieve the predictable results of decomposing the input datastream when it is just one to decompose or more than one to decompose.

Rejection of Claims Under 35 USC. §102

Applicant’s arguments:

“In addition, Smith fails to provide any disclosure of forming a "data frame comprising one or more PDUs and the appended source identifier for each PDU and transmitting the data frame over the corresponding channel," as claimed. Without such disclosure, Smith cannot be said to anticipate the claims. “

Examiner’s response:

Examiner notes that the source identifier for PDUs is nothing but “Q-IDs.” Which is illustrated on page 19 of 60/ 270, 444 as follows:

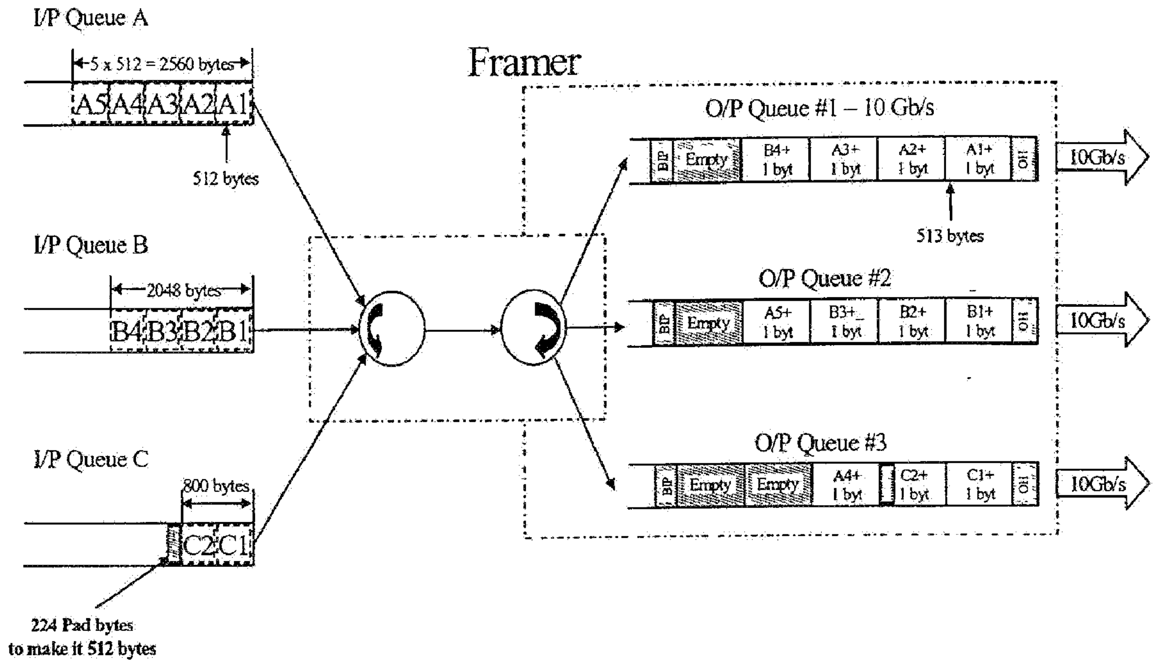


Figure 16 3 input 3 output payload formation example

Smith teaches the following in Figs. 2 and 3:

Figure 2

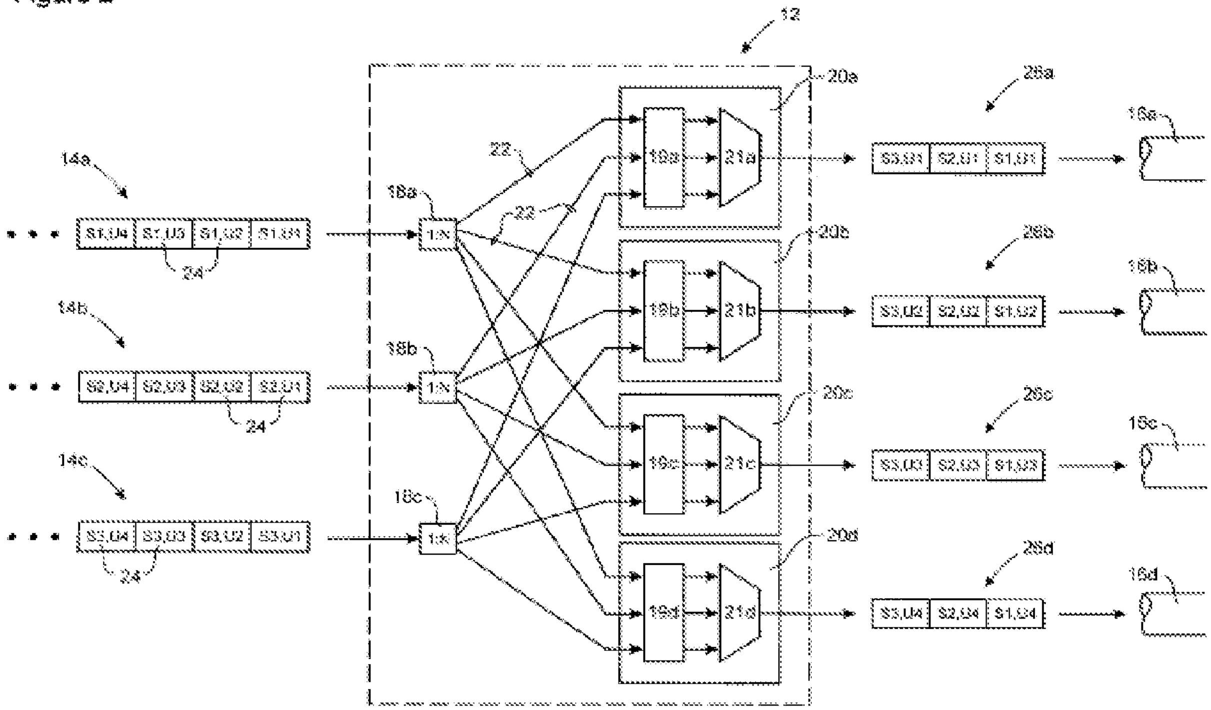
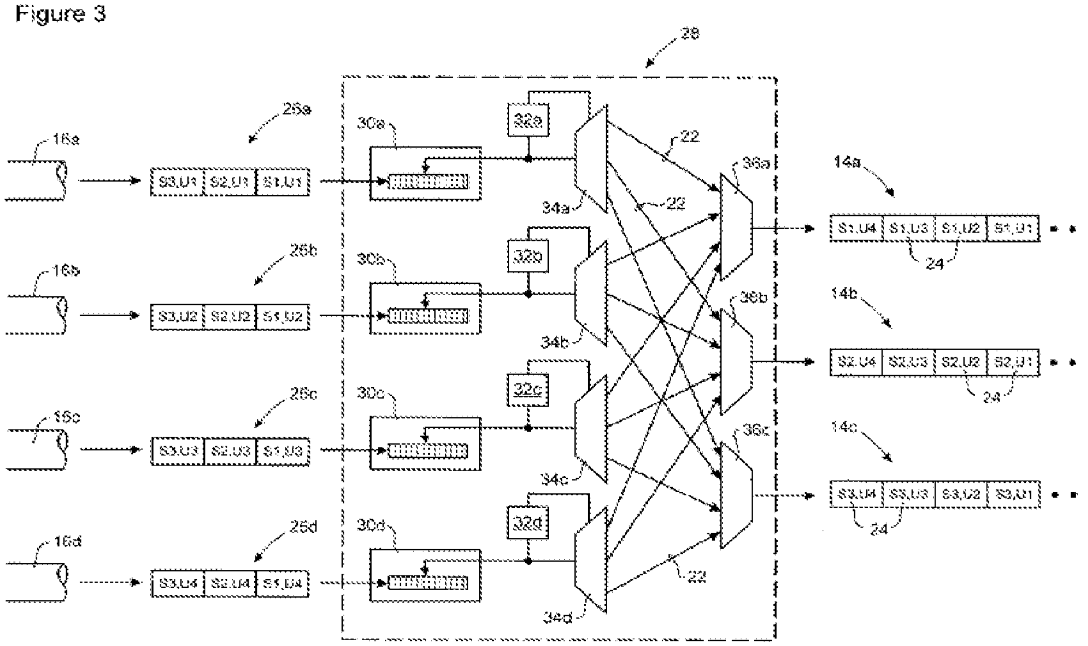


Figure 3



Also Smith teaches at col. 6, line 55-col. 7, line 21, “The signal distribution process described above with respect to FIG. 2 is fully reversible to recover the original data signals 14. FIG. 3 is a block diagram of a signal recovery unit 28, which is implemented in each receiving end node 4a e. The signal recovery unit 28 shown in FIG. 3 can be implemented in hardware and/or software downstream of conventional optical demultiplexing and opto/electrical conversion circuits, which operate to optically demultiplex the channels 16a d from a fiber link 6, and convert each composite data-stream 26a d into electronic form for processing. Conventional clock recovery and signal regeneration circuits (not shown) may also be implemented upstream of the signal recovery circuit 28 shown in FIG. 3.

The signal recovery unit 28 generally includes at least N parallel elastic buffers 30a d, each of which is arranged to receive a respective composite data-stream 26 from one of the channels 16. The elastic buffers 30a d cooperate to de-skew the composite data-streams 26a d, and thus compensate for propagation delay differences between each of the channels. Each of the de-skewed composite data-signals 26a d is then passed to a respective framer 32 and demultiplexor 34. **The framer 32 analyses the respective composite data-stream 26 to detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26,** and generates a synchronization signal which is used to control the operation of the respective demultiplexor 34. Using the synchronization signal, in combination with the known interleaving sequence of the interleavers 20a d, each demultiplexor 30a d operates to demultiplex its respective composite data-stream 26, to recover one sub-stream 22 of

<u>each data signal 14. The sub-streams 22 of each data signal 14 are forwarded (one from each demultiplexor 30) to a one of M multiplexors 32a c which multiplex the sub-streams 22 to recover the respective data signals 14."</u>

Thus as identified in the previous Office Action, Smith teaches to "detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26", as such identified by Smith as shown in Figs 2 and 3 , S1 is an input stream identifier which is a source identifier and U1 is packet identifier which is appended to the PDUs. This is exactly what the Applicant has indicated , which is the source identifier for PDUs is nothing but "Q-IDs."

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4 Claims 1-11, 13-22 and 24-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over York (US 5, 680, 400) in view of Smith et al. (hereinafter Smith) (US 7, 149, 432 B1))

Referring to claim 1,

York teaches a method for transporting information over a network (Figs. 1-3) comprising:

decomposing an input datastream into a plurality of sub-streams, wherein said decomposing comprises placing a portion of the input datastream (col. 1, line 50-57, " Data is presented to a data splitter. The data splitter separates the input data stream into N separate substreams by packaging data into packets, which may be of different sizes. As data is packetized, each packet is sent and presented to a separate data transmitter, one for each data substream, via an input queue to each transmitter. Each transmitter queue has a significant amount of packet storage available to hold input packets.")into one of a plurality of queues (Fig. 1, element TQ1, TQ2,………. TQN, col. 3, line 3-5, "Transmitters 112 and receivers 114 are connected to queues 110 and 116, each having the ability store multiple packets of data.") and

forming the portion of the input datastream using one or more payload data units (PDUs) each comprising a predetermined amount of data (col. 3, line 30-38, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and is determined at the time the network connections are established. FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."),

forming each PDU by selecting the predetermined amount of data from the input datastream (col. 3, line 30-38, " In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the

transmitters and receivers and <u>is determined at the time the network connections are established.</u> FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."), and

each queue of the plurality of queues corresponds to a corresponding channel of a plurality of channels (col. 3, line 39-48, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and is determined at the time the network connections are established. FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."); and

communicating said sub-streams between a first network element and a second network element of said network by transporting each one of said sub-streams over the corresponding channel (col. 5, line 4-17, "During network connection setup, the dam splitter interrogates each logical path to determine the allowable maximum data packet size permitted by the underlying physical transport system. By design convention, the data splitter selects one of the logical connections as the first connection to the other host computer. This connection is established first and involves the sending of greetings and setup parameters between the data splitter and the data packet reassembly unit. Setup parameters include the number and exact identity of logical channels which will be used and the ordering of logical channels as will be used during

the data transmission phase of data transfer. This is important as the data reassembly unit must have the identical number of logical channels as the transmission side and it must use them in the identical order to the transmit side. "), wherein

a transmission rate of said input datastream (col. 3, line 24-26, "To transfer a file, the host processor 104 sends a continuous data stream of data, at rates around 1-to-10 mega bytes per second.")is greater than a maximum transmission rate of any one of said channels (col. 4, line 19-23, "Transmitter data transfer rates typically range between 1.54 mega bits per second to 10 mega bits per second. Higher throughput can be achieved by increasing the number of transmitters 112 and receivers 114.")

York teaches "decomposing an input datastream" and forming a data frame comprising one or more PDUs (col. 3, line 39-48, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. and transmitting the data frame over the corresponding channel (As each substream is marked with its unique identity, all data packets in a given substream have the identity of the substream." As shown in Fig. 3).

York fails to teach "Smith decomposing an input datastream <u>of a plurality of input datastreams</u> , appending to each PDU a source identifier identifying the source of the input datastream, and said communicating comprises forming a data frame comprising one or more PDUs appended <u>source identifier for each</u>

PDU and transmitting the data frame over the corresponding channel.

Smith decomposing an input datastream of a plurality of input datastreams (Fig. 2, col. 5, line 33-39, “Each signal divider 18a c divides a respective data signal 14a c into N sub-streams 22 (i.e. one sub-stream 22 for each channel 16). As illustrated in FIG. 2, one method by which this may be accomplished is to divide each data signal 14 into a sequential series of data units 24 of a predetermined length. The length of each data unit is arbitrary, and may be as short as a single bit.”), associating with each PDU a source identifier identifying the source of the input datastream and said communicating comprises forming a data frame comprising one or more PDUs and the associated source identifiers for each PDU and transmitting the data frame over the corresponding channel ((Fig. 2, elements 14a-14c and 26a-26d, col. 5, line 33-39, “Each signal divider 18a c divides a respective data signal 14a c into N sub-streams 22 (i.e. one sub-stream 22 for each channel 16). As illustrated in FIG. 2, one method by which this may be accomplished is to divide each data signal 14 into a sequential series of data units 24 of a predetermined length. The length of each data unit is arbitrary, and may be as short as a single bit.” **Examiner notes that the source identifier for PDUs is nothing but “Q-IDs.”** Which is illustrated on page 19 of 60/ 270, 444 as follows:

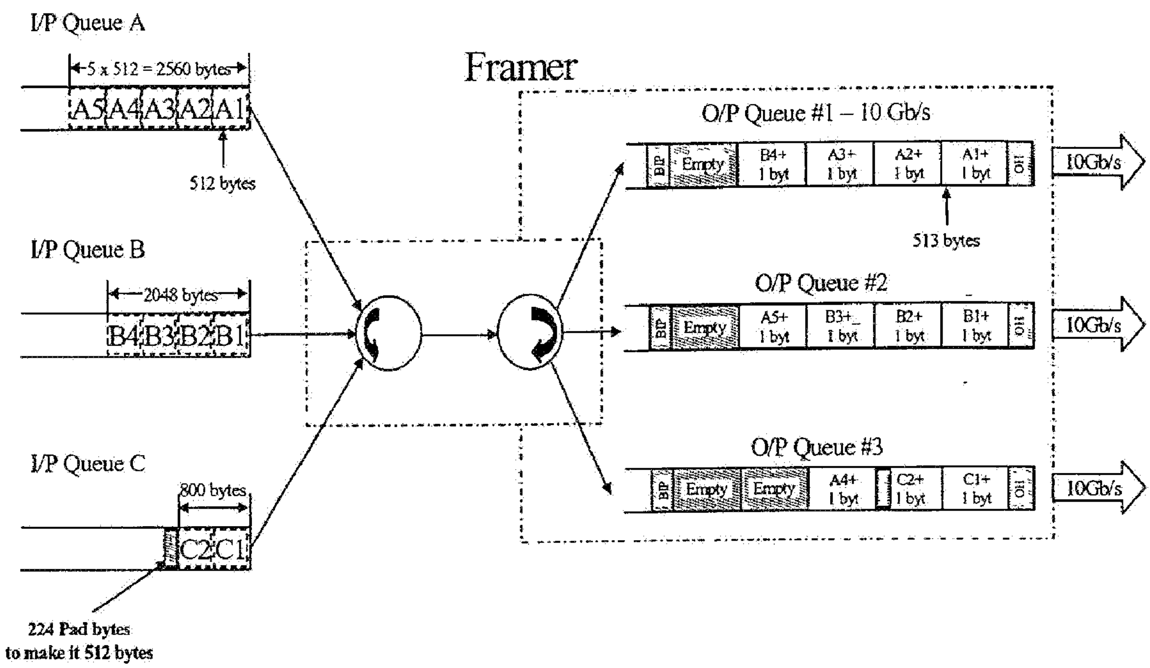


Figure 16 3 input 3 output payload formation example

Smith teaches the following in Figs. 2 and 3:

Figure 2

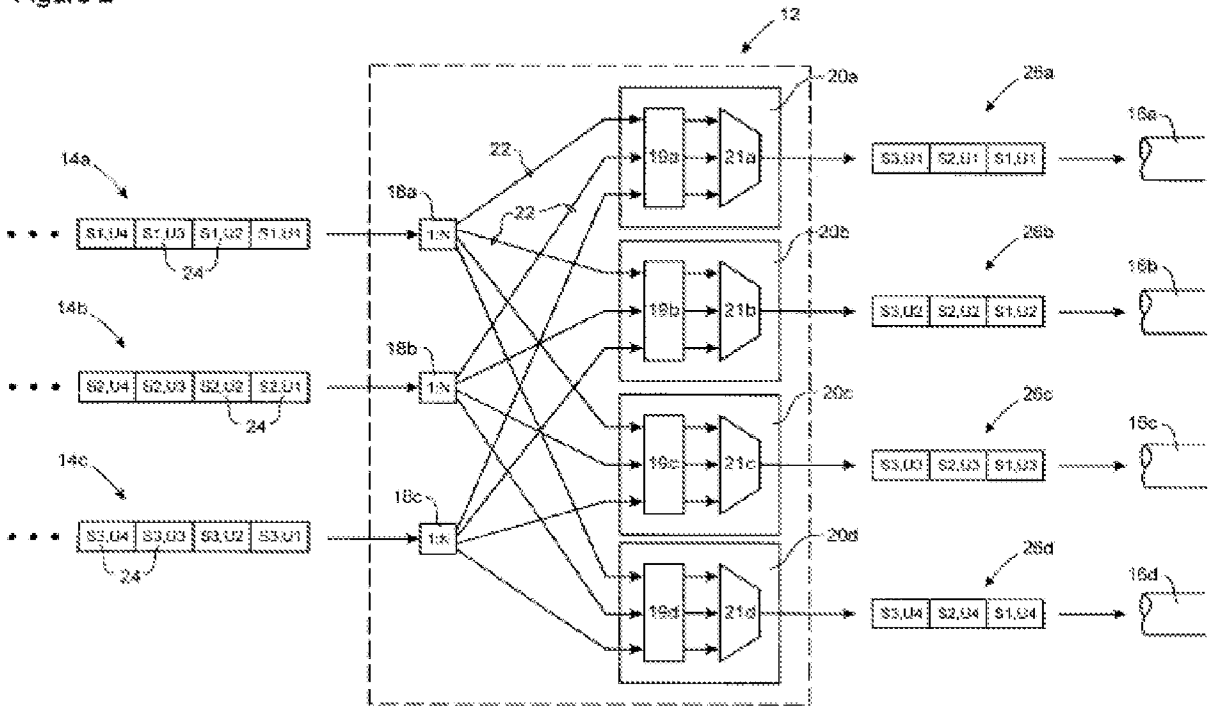
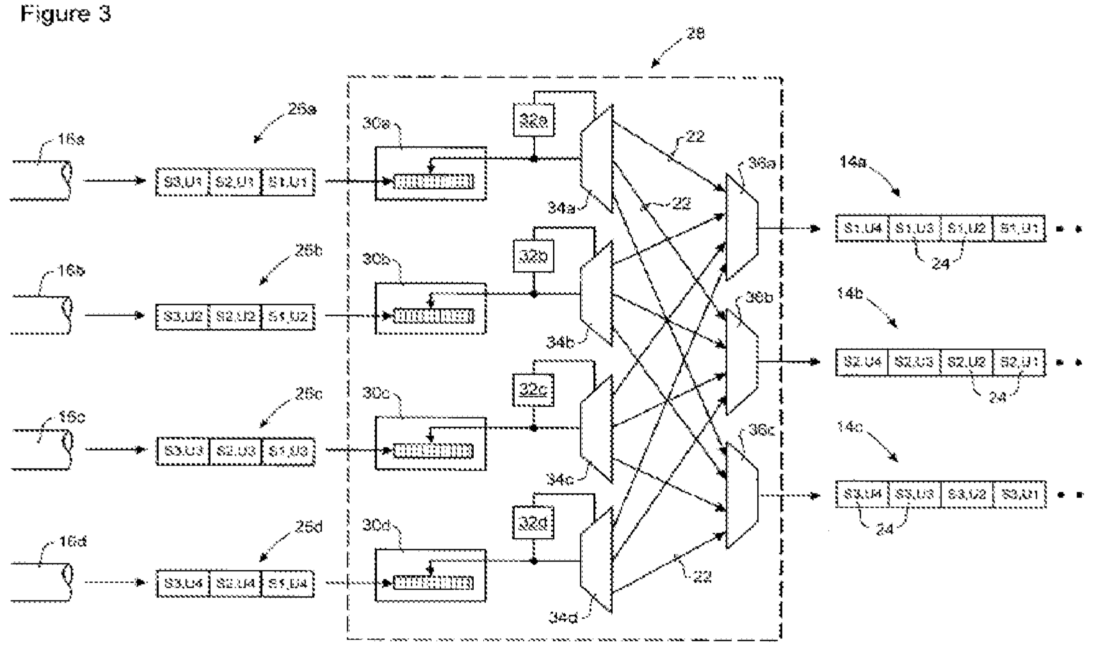


Figure 3



Also Smith teaches at col. 6, line 55-col. 7, line 21, "The signal distribution process described above with respect to FIG. 2 is fully reversible to recover the original data signals 14. FIG. 3 is a block diagram of a signal recovery unit 28, which is implemented in each receiving end node 4a e. The signal recovery unit 28 shown in FIG. 3 can be implemented in hardware and/or software downstream of conventional optical demultiplexing and opto/electrical conversion circuits, which operate to optically demultiplex the channels 16a d from a fiber link 6, and convert each composite data-stream 26a d into electronic form for processing. Conventional clock recovery and signal regeneration circuits (not shown) may also be implemented upstream of the signal recovery circuit 28 shown in FIG. 3.

The signal recovery unit 28 generally includes at least N parallel elastic buffers 30a d, each of which is arranged to receive a respective composite data-stream 26 from one of the channels 16. The elastic buffers 30a d cooperate to de-skew the composite data-streams 26a d, and thus compensate for propagation delay differences between each of the channels. Each of the de-skewed composite data-signals 26a d is then passed to a respective framer 32 and demultiplexor 34. **The framer 32 analyses the respective composite data-stream 26 to detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26,** and generates a synchronization signal which is used to control the operation of the respective demultiplexor 34. Using the synchronization signal, in combination with the known interleaving sequence of the interleavers 20a d, each demultiplexor 30a d operates to demultiplex its respective composite data-stream 26, to recover one sub-stream 22 of

<u>each data signal 14. The sub-streams 22 of each data signal 14 are forwarded (one from each demultiplexor 30) to a one of M multiplexors 32a c which multiplex the sub-streams 22 to recover the respective data signals 14."</u>

<u>Thus as identified in the previous Office Action, Smith teaches to "detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26</u>", as such identified by Smith as shown in Figs 2 and 3 , S1 is an input stream identifier which is a source identifier and U1 is packet identifier which is appended to the PDUs. This is exactly what the Applicant has indicated , <u>which is the source identifier for PDUs is nothing but "Q-IDs."</u>).

Because York and Smith teaches decomposing input datastreams, one incorporating the invention for " decomposing an input datastream" and the other incorporating the invention for "decomposing the plurality of input datastreams."

The difference of the invention lays into the inventive component they use, "Data Splitter" of York and "The signal distributor unit " of Smith. Therefore, it would have obvious to one skilled in the art to substitute one method for the other to achieve the predictable results of decomposing the input datastream when it is just one to decompose or more than one to decompose.

Referring to claim 2,

York teaches the method of claim 1, wherein each of said channels is an optical channel (col. 3, line 61-67, "It is also assumed that standard transmission links 113 are employed such as data telephone lines, <u>fiber optic cables</u>, etc. Additionally, it is possible

to have one link 113 or multiple links corresponding to the quantity of transmitters and receivers. If a single link is employed, then it is necessary to mark each substream packet with a unique identity and multiplex the transmitters.").

Referring to claim 3,

York teaches the method of claim 2, wherein each of said optical channels corresponds to a wavelength (col. 3, line 61-67, "It is also assumed that standard transmission links 113 are employed such as data telephone lines, <u>fiber optic cables</u>, etc. Additionally, it is possible to have one link 113 or multiple links corresponding to the quantity of transmitters and receivers. If a single link is employed, then it is necessary to mark each substream packet with a unique identity and multiplex the transmitters.")

Referring to claim 4,

York teaches the method of claim 1, wherein said each one of said sub-streams has a transmission rate that is equal to or less than a maximum transmission rate of a corresponding one of said channels. (col. 3, line 24-26, "To transfer a file, the host processor 104 sends a continuous data stream of data, at rates around 1-to-10 mega bytes per second.", col. 4, line 19-23, "Transmitter data transfer rates typically range between 1.54 mega bits per second to 10 mega bits per second. Higher throughput can be achieved by increasing the number of transmitters 112 and receivers 114.")

Referring to claim 5,

York teaches the method of claim 1, further comprising: assembling said sub-streams into a reconstructed output datastream (col. 4, line 23-41, "Next, in steps 212, 214 receivers 114 receive packets from transmitter 112 via link 113. The transmission links are assumed to guarantee data packet ordering as presented by the input data packet queues. The receiving side initializes as many receivers as needed, or as many data receive substreams as are required, using as many receivers as are available. Each receiver guarantees that correct ordering of received packets in their respective queues 116. Receivers 114 also guarantee that data is integrity checked and are able to handle retransmitted packets as needed. Next, in step 216, the substream reassembly unit 118, polls each receiver queue 116 for data packets. Receiver queues 116 are polled in the same prearranged order as the round robin method described earlier. Then, the substream reassembly unit 118 reassembles the packets into a final output stream and is sent to FIFO 120 (typically the same size as FIFO 106) via bus 119. Then in step 218, the host processor 122 reads the continuous data stream.")

Referring to claim 6,

York teaches the method of claim 5, wherein said assembling comprises: placing a portion of each of said substreams in a queue (Fig. 2, element 208), wherein said reconstructed output datastream is output by said queue (Fig. 2, element 214).

Referring to claim 7,

York teaches the method of claim 5, further comprising: performing protocol processing on said input datastream (col. 3, line 55-57, "It is assumed that each

transmitter are capable of sending packets of data to a receiver with data integrity checks and employ data compression if so configured."); and performing protocol processing on said reconstructed output datastream (Fig. 2, 210 and 212), wherein said protocol processing is performed using a protocol processor comprising a protocol stack (Fig. 1, elements 104 and 122).

Referring to claim 8,

York teaches the method of claim 1, further comprising: performing compression on a one of said sub-streams, wherein said one of said sub-streams has a transmission rate greater than a maximum transmission rate of the corresponding channel.(col. 3, line 55-57, "It is assumed that each transmitter are capable of sending packets of data to a receiver with data integrity checks and employ data compression if so configured.")

Referring to claim 9,

York teaches the method of claim 1, wherein said network is an existing network (Figs. 1 and 3).

Referring to claim 10,

York teaches the method of claim 1method of claim 1, wherein said network comprises an underlying network infrastructure (Fig. 1, element 113), and the method is performed without alteration of said underlying network infrastructure It is also assumed that standard transmission links 113 are employed such as data telephone lines, fiber optic cables, etc.", Col. 2, line 56-62, "The high performance communication system 100

takes a single input data stream 105, 107 from the host processor 104 and splits the single input data stream 105, 107 into multiple parallel streams 109 which are then presented to one or more independent physical data transmitters 112 and one or more independent physical data receivers 114.")

Referring to claim 11,

York teaches the method of claim 10, wherein said network comprises a fiber-optic system. (col. 3, line 61-67, "It is also assumed that standard transmission links 113 are employed such as data telephone lines, fiber optic cables, etc. Additionally, it is possible to have one link 113 or multiple links corresponding to the quantity of transmitters and receivers. If a single link is employed, then it is necessary to mark each substream packet with a unique identity and multiplex the transmitters.").

Referring to claim 13,

York teaches a method for receiving information transported over a network (Fig. 1, element 118, Fig. 2, element 212) comprising:

receiving a plurality of sub-streams (Fig. 1, elements 116A……116N, 118, Fig. 2, element 212), wherein said sub-streams are created by decomposing an input datastream into a plurality of sub-streams, wherein said decomposing comprises placing a portion of the input datastream (col. 1, line 50-57, " Data is presented to a data splitter. The data splitter separates the input data stream into N separate substreams by packaging data into packets, which may be of different sizes. As data is packetized, each packet is sent and presented to a separate data transmitter, one for each data

substream, via an input queue to each transmitter. Each transmitter queue has a significant amount of packet storage available to hold input packets.") into one of a plurality of queues (Fig. 1, element TQ1, TQ2,………. TQN, col. 3, line 3-5, "Transmitters 112 and receivers 114 are connected to queues 110 and 116, each having the ability store multiple packets of data.") and

forming the portion of the input datastream using one or more payload data units (PDUs) each comprising a predetermined amount of data (col. 3, line 30-38, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and is determined at the time the network connections are established. FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."),

forming each PDU by selecting the predetermined amount of data from the input datastream (col. 3, line 30-38, " In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and <u>is determined at the time the network connections are established.</u> FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."), and

each queue of the plurality of queues corresponds to a corresponding channel of a plurality of channels (col. 3, line 39-48, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and is determined at the time the network connections are established. FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."); and

each of said sub-streams is transported over said network on the corresponding channel (col. 5, line 4-17, "During network connection setup, the dam splitter interrogates each logical path to determine the allowable maximum data packet size permitted by the underlying physical transport system. By design convention, the data splitter selects one of the logical connections as the first connection to the other host computer. This connection is established first and involves the sending of greetings and setup parameters between the data splitter and the data packet reassembly unit. Setup parameters include the number and exact identity of logical channels which will be used and the ordering of logical channels as will be used during the data transmission phase of data transfer. This is important as the data reassembly unit must have the identical number of logical channels as the transmission side and it must use them in the identical order to the transmit side. "), and

a transmission rate of said input datastream (col. 3, line 24-26, "To transfer a file, the host processor 104 sends a continuous data stream of data, at rates around 1-to-10

mega bytes per second.")is greater than a maximum transmission rate of any one of said channels (col. 4, line 19-23, "Transmitter data transfer rates typically range between 1.54 mega bits per second to 10 mega bits per second. Higher throughput can be achieved by increasing the number of transmitters 112 and receivers 114.")

assembling said sub-streams into a reconstructed output datastream (col. 4, line 34-41, "Next, in step 216, the substream reassembly unit 118, polls each receiver queue 116 for data packets. Receiver queues 116 are polled in the same prearranged order as the round robin method described earlier. Then, the substream reassembly unit 118 reassembles the packets into a final output stream and is sent to FIFO 120 (typically the same size as FIFO 106) via bus 119. Then in step 218, the host processor 122 reads the continuous data stream.")

York teaches "decomposing an input datastream" and forming a data frame comprising one or more PDUs (col. 3, line 39-48, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. and transmitting the data frame over the corresponding channel (As each substream is marked with its unique identity, all data packets in a given substream have the identity of the substream." As shown in Fig. 3).

York fails to teach "Smith decomposing an input datastream <u>of a plurality of input datastreams</u> , appending to each PDU a source identifier identifying the source of the input datastream, and said communicating comprises forming a data frame

comprising one or more PDUs and the <u>appended source identifier for each PDU</u> and transmitting the data frame over the corresponding channel.

Smith decomposing an input datastream of a plurality of input datastreams (Fig. 2, col. 5, line 33-39, “Each signal divider 18a c divides a respective data signal 14a c into N sub-streams 22 (i.e. one sub-stream 22 for each channel 16). As illustrated in FIG. 2, one method by which this may be accomplished is to divide each data signal 14 into a sequential series of data units 24 of a predetermined length. The length of each data unit is arbitrary, and may be as short as a single bit.”), associating with each PDU a source identifier identifying the source of the input datastream and said communicating comprises forming a data frame comprising one or more PDUs and the associated source identifiers for each PDU and transmitting the data frame over the corresponding channel ((Fig. 2, elements 14a-14c and 26a-26d, col. 5, line 33-39, “Each signal divider 18a c divides a respective data signal 14a c into N sub-streams 22 (i.e. one sub-stream 22 for each channel 16). As illustrated in FIG. 2, one method by which this may be accomplished is to divide each data signal 14 into a sequential series of data units 24 of a predetermined length. The length of each data unit is arbitrary, and may be as short as a single bit.” <u>**Examiner notes that the source identifier for PDUs is nothing but “Q-IDs.”**</u> Which is illustrated on page 19 of 60/ 270, 444 as follows:

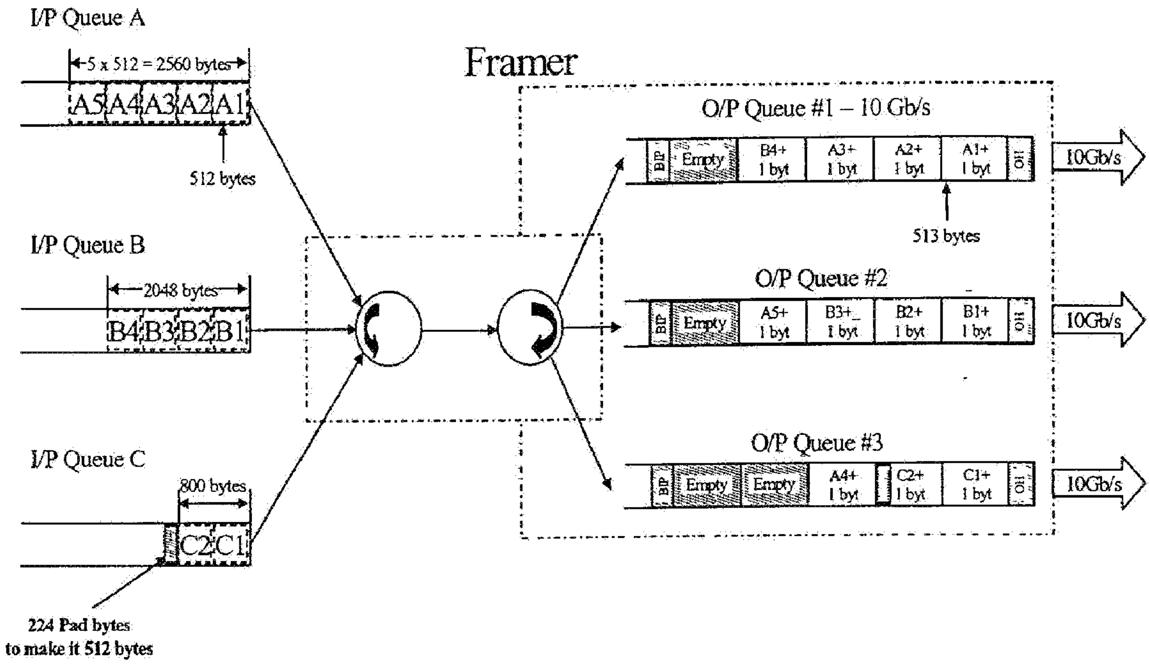


Figure 16 3 input 3 output payload formation example

Smith teaches the following in Figs. 2 and 3:

Figure 2

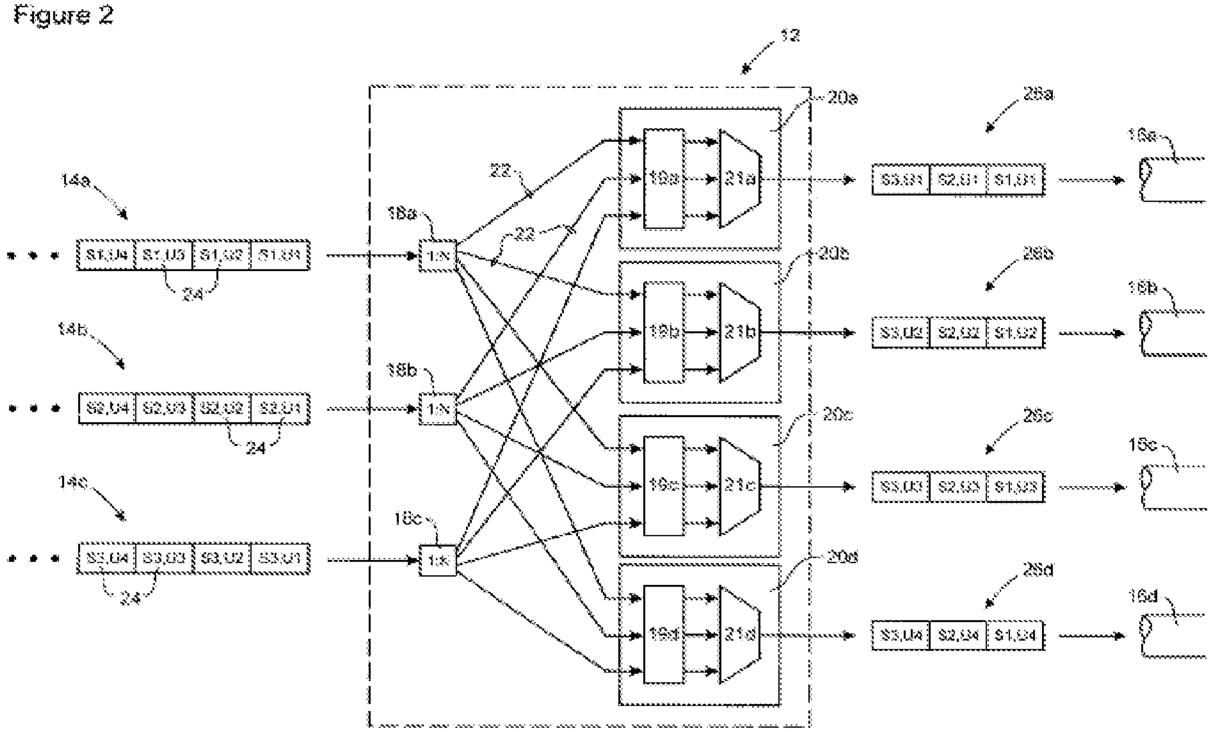
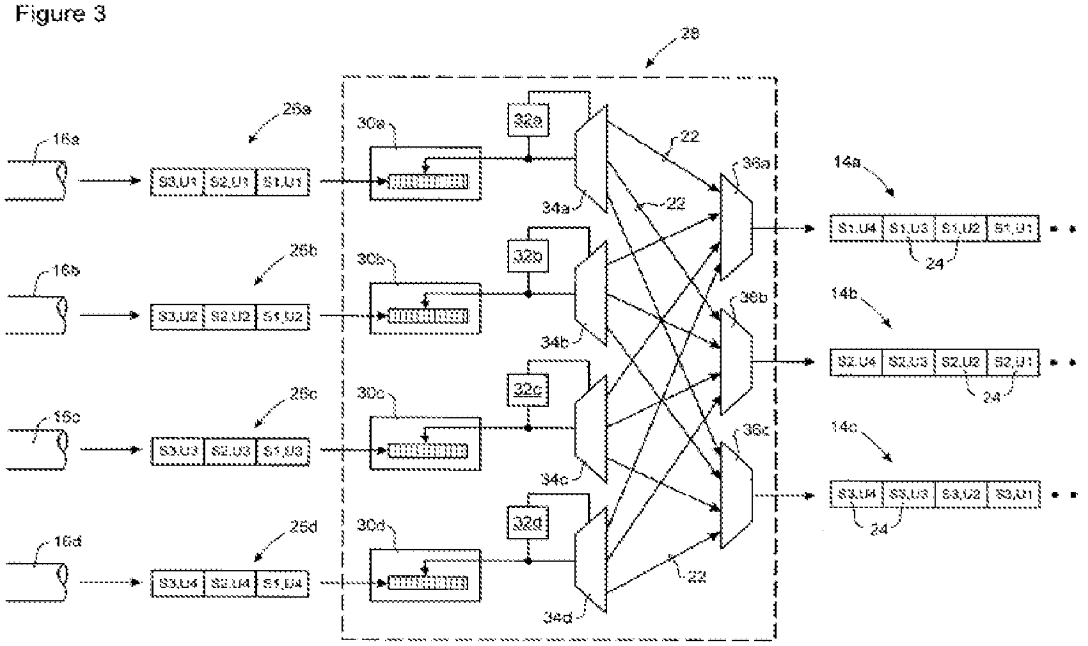


Figure 3



Also Smith teaches at col. 6, line 55-col. 7, line 21, “The signal distribution process described above with respect to FIG. 2 is fully reversible to recover the original data signals 14. FIG. 3 is a block diagram of a signal recovery unit 28, which is implemented in each receiving end node 4a e. The signal recovery unit 28 shown in FIG. 3 can be implemented in hardware and/or software downstream of conventional optical demultiplexing and opto/electrical conversion circuits, which operate to optically demultiplex the channels 16a d from a fiber link 6, and convert each composite data-stream 26a d into electronic form for processing. Conventional clock recovery and signal regeneration circuits (not shown) may also be implemented upstream of the signal recovery circuit 28 shown in FIG. 3.

The signal recovery unit 28 generally includes at least N parallel elastic buffers 30a d, each of which is arranged to receive a respective composite data-stream 26 from one of the channels 16. The elastic buffers 30a d cooperate to de-skew the composite data-streams 26a d, and thus compensate for propagation delay differences between each of the channels. Each of the de-skewed composite data-signals 26a d is then passed to a respective framer 32 and demultiplexor 34. **The framer 32 analyses the respective composite data-stream 26 to detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26,** and generates a synchronization signal which is used to control the operation of the respective demultiplexor 34. Using the synchronization signal, in combination with the known interleaving sequence of the interleavers 20a d, each demultiplexor 30a d operates to demultiplex its respective composite data-stream 26, to recover one sub-stream 22 of

each data signal 14. The sub-streams 22 of each data signal 14 are forwarded (one from each demultiplexor 30) to a one of M multiplexors 32a c which multiplex the sub-streams 22 to recover the respective data signals 14."

Thus as identified in the previous Office Action, Smith teaches to "detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26", as such identified by Smith as shown in Figs 2 and 3 , S1 is an input stream identifier which is a source identifier and U1 is packet identifier which is appended to the PDUs. This is exactly what the Applicant has indicated , which is the source identifier for PDUs is nothing but "Q-IDs.").

Because York and Smith teaches decomposing input datastreams, one incorporating the invention for " decomposing an input datastream" and the other incorporating the invention for "decomposing the plurality of input datastreams."

The difference of the invention lays into the inventive component they use, "Data Splitter" of York and "The signal distributor unit " of Smith. Therefore, it would have obvious to one skilled in the art to substitute one method for the other to achieve the predictable results of decomposing the input datastream when it is just one to decompose or more than one to decompose.

Referring to claim 14,

York teaches the method of claim 13, wherein each of said channels is an optical channel (col. 3, line 61-67, "It is also assumed that standard transmission links 113 are employed such as data telephone lines, fiber optic cables, etc. Additionally, it is possible

to have one link 113 or multiple links corresponding to the quantity of transmitters and receivers. If a single link is employed, then it is necessary to mark each substream packet with a unique identity and multiplex the transmitters.").

Referring to claim 15,

York teaches the method of claim 14, wherein each of said optical channels corresponds to a wavelength (col. 3, line 61-67, "It is also assumed that standard transmission links 113 are employed such as data telephone lines, fiber optic cables, etc. Additionally, it is possible to have one link 113 or multiple links corresponding to the quantity of transmitters and receivers. If a single link is employed, then it is necessary to mark each substream packet with a unique identity and multiplex the transmitters.")

Referring to claim 16,

York teaches the method of claim 13, wherein said each one of said sub-streams has a transmission rate that is equal to or less than a maximum transmission rate of a corresponding one of said channels. (col. 3, line 24-26, "To transfer a file, the host processor 104 sends a continuous data stream of data, at rates around 1-to-10 mega bytes per second.", col. 4, line 19-23, "Transmitter data transfer rates typically range between 1.54 mega bits per second to 10 mega bits per second. Higher throughput can be achieved by increasing the number of transmitters 112 and receivers 114.")

Referring to claim 17,

York teaches the method of claim 5, wherein said assembling comprises: placing a portion of each of said substreams in a queue (Fig. 2, element 208), wherein said reconstructed output datastream is output by said queue (Fig. 2, element 214).

Referring to claim 18,

York teaches the method of claim 13, further comprising: decomposing said input datastream into said sub-streams; and transporting said each of said sub-streams over said network on the corresponding channel. (col. 5, line 4-17, "During network connection setup, the dam splitter interrogates each logical path to determine the allowable maximum data packet size permitted by the underlying physical transport system. By design convention, the data splitter selects one of the logical connections as the first connection to the other host computer. This connection is established first and involves the sending of greetings and setup parameters between the data splitter and the data packet reassembly unit. Setup parameters include the number and exact identity of logical channels which will be used and the ordering of logical channels as will be used during the data transmission phase of data transfer. This is important as the data reassembly unit must have the identical number of logical channels as the transmission side and it must use them in the identical order to the transmit side. ")

Referring to claim 19,

York teaches the method of claim 13, further comprising: performing protocol processing on said input datastream (col. 3, line 55-57, "It is assumed that each transmitter are capable of sending packets of data to a receiver with data integrity

checks and employ data compression if so configured."); and performing protocol processing on said reconstructed output datastream (Fig. 2, 210 and 212), wherein said protocol processing is performed using a protocol processor comprising a protocol stack (Fig. 1, elements 104 and 122).

Referring to claim 20,

York teaches the method of claim 13, wherein said network is an existing network (Figs. 1 and 3).

Referring to claim 21,

York teaches the method of claim 13, wherein said network comprises an underlying network infrastructure (Fig. 1, element 113), and the method is performed without alteration of said underlying network infrastructure It is also assumed that standard transmission links 113 are employed such as data telephone lines, fiber optic cables, etc.", Col. 2, line 56-62, "The high performance communication system 100 takes a single input data stream 105, 107 from the host processor 104 and splits the single input data stream 105, 107 into multiple parallel streams 109 which are then presented to one or more independent physical data transmitters 112 and one or more independent physical data receivers 114.")

Referring to claim 22,

York teaches the method of claim 21, wherein said network comprises a fiber-optic system. (col. 3, line 61-67, "It is also assumed that standard transmission links 113

are employed such as data telephone lines, fiber optic cables, etc. Additionally, it is possible to have one link 113 or multiple links corresponding to the quantity of transmitters and receivers. If a single link is employed, then it is necessary to mark each substream packet with a unique identity and multiplex the transmitters.").

Referring to claim 24,

York teaches an apparatus for transporting information over a network comprising:

a first sub-stream management device (Fig. 1, elements 102, 103, 106, 108 and 110A....110N), comprising an input configured to receive an input datastream (Fig. 1, element 104), and a plurality of outputs (Fig. 1, element 108, 11- A.......110N), wherein each of said outputs is c6nfigur~d to output one of a plurality of sub-streams (Fig.1, elements 110A.......100n, 112A...........112N), wherein the input datastream is decomposed to form the plurality of sub-streams, wherein said decomposing comprises placing a portion of the input datastream (col. 1, line 50-57, " Data is presented to a data splitter. The data splitter separates the input data stream into N separate substreams by packaging data into packets, which may be of different sizes. As data is packetized, each packet is sent and presented to a separate data transmitter, one for each data substream, via an input queue to each transmitter. Each transmitter queue has a significant amount of packet storage available to hold input packets.")into one of a plurality of queues (Fig. 1, element TQ1, TQ2,.......... TQN, col. 3, line 3-5,

"Transmitters 112 and receivers 114 are connected to queues 110 and 116, each having the ability store multiple packets of data.") and

forming the portion of the input datastream using one or more payload data units (PDUs) each comprising a predetermined amount of data (col. 3, line 30-38, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and is determined at the time the network connections are established. FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."),

forming each PDU by selecting the predetermined amount of data from the input datastream (col. 3, line 30-38, " In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and <u>is determined at the time the network connections are established.</u> FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."), and

each queue of the plurality of queues corresponds to a corresponding channel of a plurality of channels (col. 3, line 39-48, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into

packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and is determined at the time the network connections are established. FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."); and

each of said sub-streams is transported over said network on the corresponding channel (col. 5, line 4-17, "During network connection setup, the dam splitter interrogates each logical path to determine the allowable maximum data packet size permitted by the underlying physical transport system. By design convention, the data splitter selects one of the logical connections as the first connection to the other host computer. This connection is established first and involves the sending of greetings and setup parameters between the data splitter and the data packet reassembly unit. Setup parameters include the number and exact identity of logical channels which will be used and the ordering of logical channels as will be used during the data transmission phase of data transfer. This is important as the data reassembly unit must have the identical number of logical channels as the transmission side and it must use them in the identical order to the transmit side. "), and

a transmission rate of said input datastream (col. 3, line 24-26, "To transfer a file, the host processor 104 sends a continuous data stream of data, at rates around 1-to-10 mega bytes per second.")is greater than a maximum transmission rate of any one of said channels (col. 4, line 19-23, "Transmitter data transfer rates typically range

between 1.54 mega bits per second to 10 mega bits per second. Higher throughput can be achieved by increasing the number of transmitters 112 and receivers 114.")

York teaches "decomposing an input datastream" and forming a data frame comprising one or more PDUs (col. 3, line 39-48, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. and transmitting the data frame over the corresponding channel (As each substream is marked with its unique identity, all data packets in a given substream have the identity of the substream." As shown in Fig. 3).

York fails to teach "Smith decomposing an input datastream <u>of a plurality of input datastreams</u> , appending to each PDU a source identifier identifying the source of the input datastream, and said communicating comprises forming a data frame comprising one or more PDUs and <u>the appended source identifier for each PDU</u> and transmitting the data frame over the corresponding channel.

Smith decomposing an input datastream of a plurality of input datastreams (Fig. 2, col. 5, line 33-39, "Each signal divider 18a c divides a respective data signal 14a c into N sub-streams 22 (i.e. one sub-stream 22 for each channel 16). As illustrated in FIG. 2, one method by which this may be accomplished is to divide each data signal 14 into a sequential series of data units 24 of a predetermined length. The length of each data unit is arbitrary, and may be as short as a single bit."), associating with each PDU

a source identifier identifying the source of the input datastream and said communicating comprises forming a data frame comprising one or more PDUs and the associated source identifiers for each PDU and transmitting the data frame over the corresponding channel ((Fig. 2, elements 14a-14c and 26a-26d, col. 5, line 33-39, "Each signal divider 18a c divides a respective data signal 14a c into N sub-streams 22 (i.e. one sub-stream 22 for each channel 16). As illustrated in FIG. 2, one method by which this may be accomplished is to divide each data signal 14 into a sequential series of data units 24 of a predetermined length. The length of each data unit is arbitrary, and may be as short as a single bit." **<u>Examiner notes that the source identifier for PDUs is nothing but "Q-IDs."</u>** Which is illustrated on page 19 of 60/ 270, 444 as follows:

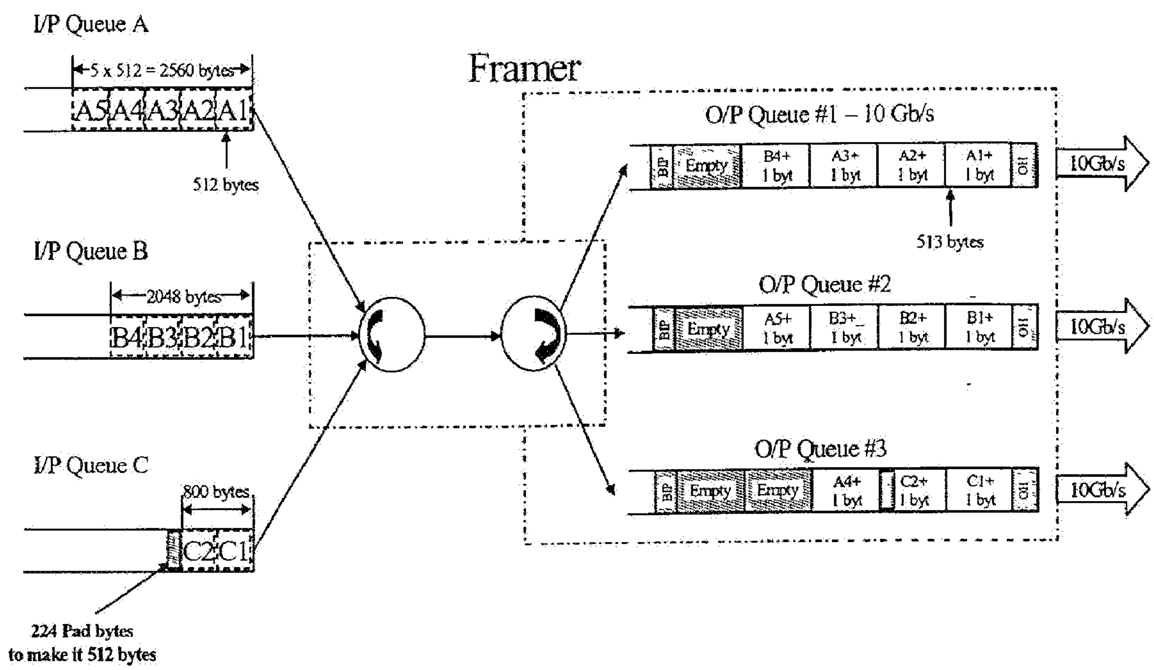


Figure 16 3 input 3 output payload formation example

Smith teaches the following in Figs. 2 and 3:

Figure 2

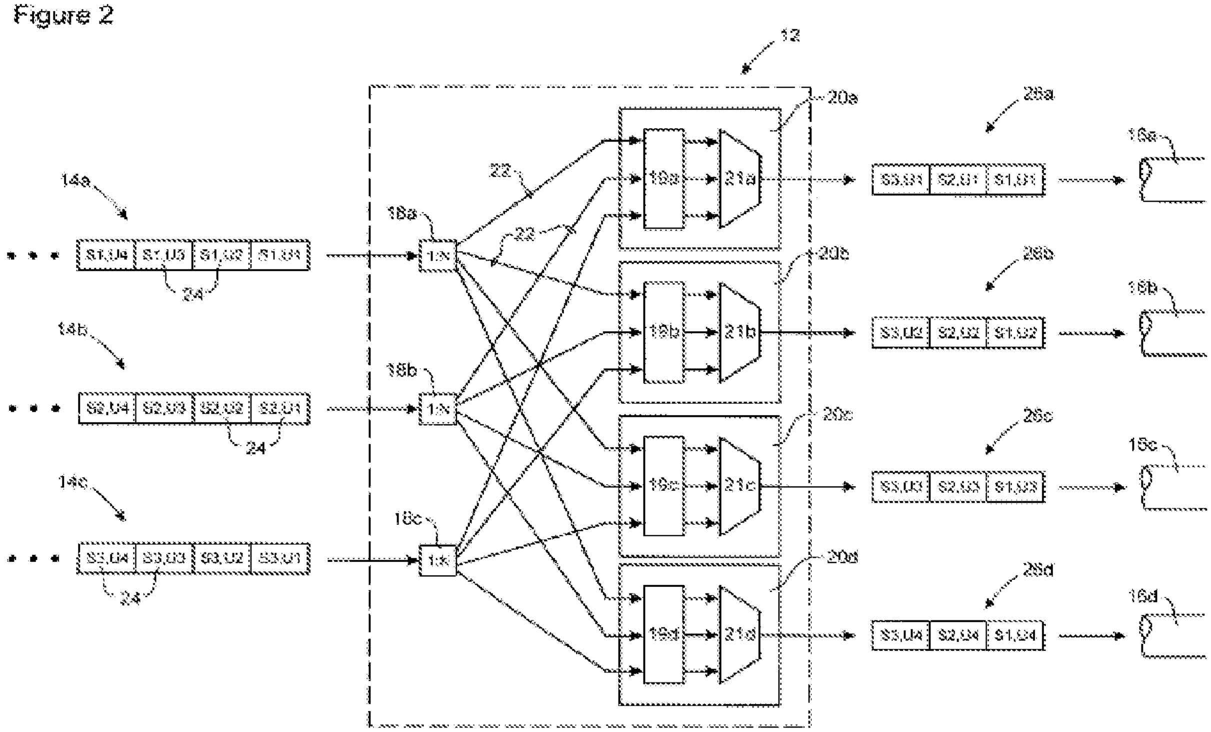
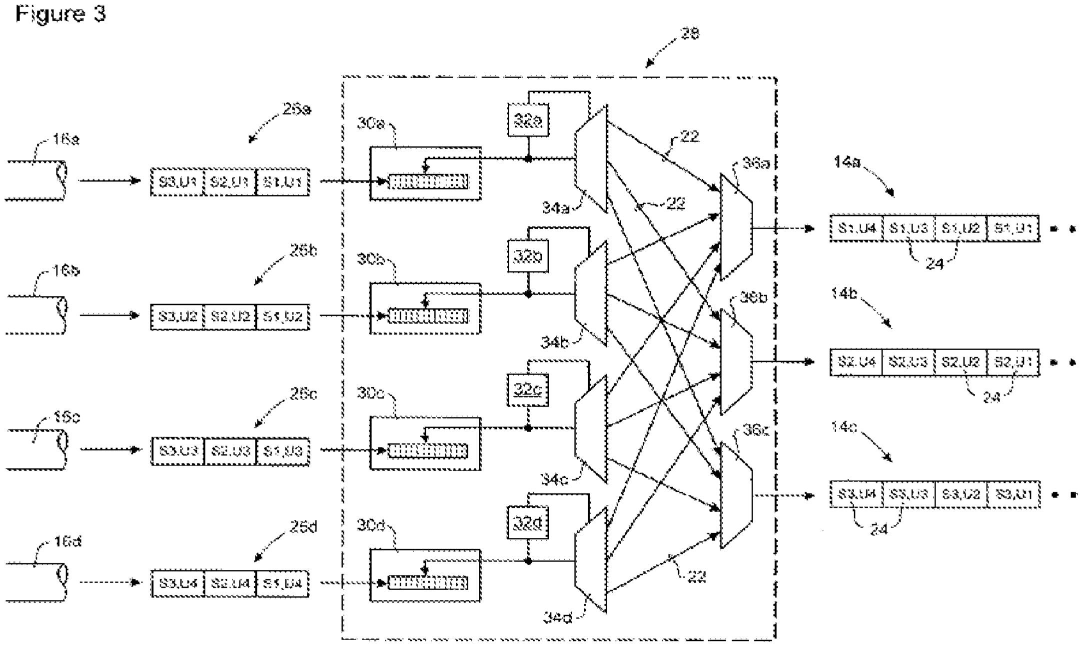


Figure 3



Also Smith teaches at col. 6, line 55-col. 7, line 21, "The signal distribution process described above with respect to FIG. 2 is fully reversible to recover the original data signals 14. FIG. 3 is a block diagram of a signal recovery unit 28, which is implemented in each receiving end node 4a e. The signal recovery unit 28 shown in FIG. 3 can be implemented in hardware and/or software downstream of conventional optical demultiplexing and opto/electrical conversion circuits, which operate to optically demultiplex the channels 16a d from a fiber link 6, and convert each composite data-stream 26a d into electronic form for processing. Conventional clock recovery and signal regeneration circuits (not shown) may also be implemented upstream of the signal recovery circuit 28 shown in FIG. 3.

The signal recovery unit 28 generally includes at least N parallel elastic buffers 30a d, each of which is arranged to receive a respective composite data-stream 26 from one of the channels 16. The elastic buffers 30a d cooperate to de-skew the composite data-streams 26a d, and thus compensate for propagation delay differences between each of the channels. Each of the de-skewed composite data-signals 26a d is then passed to a respective framer 32 and demultiplexor 34. **The framer 32 analyses the respective composite data-stream 26 to detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26,** and generates a synchronization signal which is used to control the operation of the respective demultiplexor 34. Using the synchronization signal, in combination with the known interleaving sequence of the interleavers 20a d, each demultiplexor 30a d operates to demultiplex its respective composite data-stream 26, to recover one sub-stream 22 of

each data signal 14. The sub-streams 22 of each data signal 14 are forwarded (one from each demultiplexor 30) to a one of M multiplexors 32a c which multiplex the sub-streams 22 to recover the respective data signals 14."

Thus as identified in the previous Office Action, Smith teaches to "detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26", as such identified by Smith as shown in Figs 2 and 3 , S1 is an input stream identifier which is a source identifier and U1 is packet identifier which is appended to the PDUs. This is exactly what the Applicant has indicated , which is the source identifier for PDUs is nothing but "Q-IDs.").

Because York and Smith teaches decomposing input datastreams, one incorporating the invention for " decomposing an input datastream" and the other incorporating the invention for "decomposing the plurality of input datastreams."

The difference of the invention lays into the inventive component they use, "Data Splitter" of York and "The signal distributor unit " of Smith. Therefore, it would have obvious to one skilled in the art to substitute one method for the other to achieve the predictable results of decomposing the input datastream when it is just one to decompose or more than one to decompose.

Referring to claim 25,

Claim 25 is a claim to an apparatus for carrying t out the method of claim 14. Therefore claim 25 is rejected for the reasons set forth for claim 14.

Referring to claim 26,

Claim 26 is a claim to an apparatus for carrying t out the method of claim 15. Therefore claim 26 is rejected for the reasons set forth for claim 15.

Referring to claim 27,

Claim 27 is a claim to an apparatus for carrying t out the method of claim 16. Therefore claim 27 is rejected for the reasons set forth for claim 16.

Referring to claim 28,

York teaches the apparatus of claim 24, further comprising a second sub-stream management device (Fig. 1, elements, 114A…..114N, 116A….116N, element 118, element 120), comprising an output configured to output a reconstructed output datastream (Fig. 1, element 118), and a plurality of inputs(Fig. 1, elements, 114A…..114N, 116A….116), wherein each of said inputs is configured to receive one of said sub- streams (Fig. 1, elements, 114A…..114N, 116A….116N); and an underlying network infrastructure, communicatively coupled to said first and said second sub-stream management devices, and comprising said channels (col. 5, line 4-17, "During network connection setup, the dam splitter interrogates each logical path to determine the allowable maximum data packet size permitted by the underlying physical transport system. By design convention, the data splitter selects one of the logical connections as the first connection to the other host computer. This connection is established first and involves the sending of greetings and setup parameters between the data splitter and the data packet reassembly unit. Setup parameters include the number and exact identity of logical channels which will be used and the ordering of logical channels as will be used during the data transmission phase of data transfer.

This is important as the data reassembly unit must have the identical number of logical channels as the transmission side and it must use them in the identical order to the transmit side. ").

Referring to claim 29,

York teaches the apparatus of claim 28, further comprising

a first protocol processor, coupled to said input (col. 3, line 55-57, "It is assumed that each transmitter are capable of sending packets of data to a receiver with data integrity checks and employ data compression if so configured." (Fig. 2, 210 and 212); a second protocol processor, coupled to said output; and wherein, the first and second protocol processors each comprise a protocol stack. (Fig. 1, elements 104 and 122 both including 108 and 118).

Referring to claim 30,

York teaches an apparatus for transporting information over a network comprising:

a first sub-stream management device(Fig. 1, elements 114A...114N, 116A.....116N, 118, 120 and 121), comprising an output configured to output a reconstructed output datastream(Fig. 1, elements 114A...114N, 116A.....116N, 118, 120 and 121), and a plurality of inputs(Fig. 1, elements 114A...114N, 116A.....116N, 118, 120 and 121), wherein each of said inputs is configured to receive one of a plurality

of sub-streams (Fig. 1, elements 114A...114N, 116A.....116N, 118, 120 and 121),wherein

said decomposing comprises placing a portion of the input datastream (col. 1, line 50-57, " Data is presented to a data splitter. The data splitter separates the input data stream into N separate substreams by packaging data into packets, which may be of different sizes. As data is packetized, each packet is sent and presented to a separate data transmitter, one for each data substream, via an input queue to each transmitter. Each transmitter queue has a significant amount of packet storage available to hold input packets.")into one of a plurality of queues (Fig. 1, element TQ1, TQ2,.......... TQN, col. 3, line 3-5, "Transmitters 112 and receivers 114 are connected to queues 110 and 116, each having the ability store multiple packets of data.") and

forming the portion of the input datastream using one or more payload data units (PDUs) each comprising a predetermined amount of data (col. 3, line 30-38, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and is determined at the time the network connections are established. FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."),

forming each PDU by selecting the predetermined amount of data from the input datastream (col. 3, line 30-38, " In step 204, the data splitter 108 splits the single

continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and <u>is determined at the time the network connections are established.</u> FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."), and

each queue of the plurality of queues corresponds to a corresponding channel of a plurality of channels (col. 3, line 39-48, "In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. The packet size is dependent on the characteristics of the transmitters and receivers and is determined at the time the network connections are established. FIG. 3 shows part of a continuous data stream and an example packet. In this description and throughout the figures, N represents any number greater than 1."); and

each of said sub-streams is transported over said network on the corresponding channel (col. 5, line 4-17, "During network connection setup, the dam splitter interrogates each logical path to determine the allowable maximum data packet size permitted by the underlying physical transport system. By design convention, the data splitter selects one of the logical connections as the first connection to the other host computer. This connection is established first and involves the sending of greetings and setup parameters between the data splitter and the data packet reassembly unit. Setup parameters include the number and exact identity of logical channels which will be used

and the ordering of logical channels as will be used during the data transmission phase of data transfer. This is important as the data reassembly unit must have the identical number of logical channels as the transmission side and it must use them in the identical order to the transmit side. “), and

a transmission rate of said input datastream (col. 3, line 24-26, “To transfer a file, the host processor 104 sends a continuous data stream of data, at rates around 1-to-10 mega bytes per second.”)is greater than a maximum transmission rate of any one of said channels (col. 4, line 19-23, “Transmitter data transfer rates typically range between 1.54 mega bits per second to 10 mega bits per second. Higher throughput can be achieved by increasing the number of transmitters 112 and receivers 114.”)

York teaches “decomposing an input datastream” and forming a data frame comprising one or more PDUs (col. 3, line 39-48, “In step 204, the data splitter 108 splits the single continuous data stream into N separate substreams by packaging the data into packets, which may be variable sizes. and transmitting the data frame over the corresponding channel (As each substream is marked with its unique identity, all data packets in a given substream have the identity of the substream.” As shown in Fig. 3).

York fails to teach “Smith decomposing an input datastream <u>of a plurality of input datastreams</u> , appending to each PDU a source identifier identifying the source of the input datastream, and said communicating comprises forming a data frame comprising one or more PDUs and <u>the appended source identifier for each</u>

PDU and transmitting the data frame over the corresponding channel.

Smith decomposing an input datastream of a plurality of input datastreams (Fig. 2, col. 5, line 33-39, "Each signal divider 18a c divides a respective data signal 14a c into N sub-streams 22 (i.e. one sub-stream 22 for each channel 16). As illustrated in FIG. 2, one method by which this may be accomplished is to divide each data signal 14 into a sequential series of data units 24 of a predetermined length. The length of each data unit is arbitrary, and may be as short as a single bit."), associating with each PDU a source identifier identifying the source of the input datastream and said communicating comprises forming a data frame comprising one or more PDUs and the associated source identifiers for each PDU and transmitting the data frame over the corresponding channel ((Fig. 2, elements 14a-14c and 26a-26d, col. 5, line 33-39, "Each signal divider 18a c divides a respective data signal 14a c into N sub-streams 22 (i.e. one sub-stream 22 for each channel 16). As illustrated in FIG. 2, one method by which this may be accomplished is to divide each data signal 14 into a sequential series of data units 24 of a predetermined length. The length of each data unit is arbitrary, and may be as short as a single bit." **Examiner notes that the source identifier for PDUs is nothing but "Q-IDs."** Which is illustrated on page 19 of 60/ 270, 444 as follows:

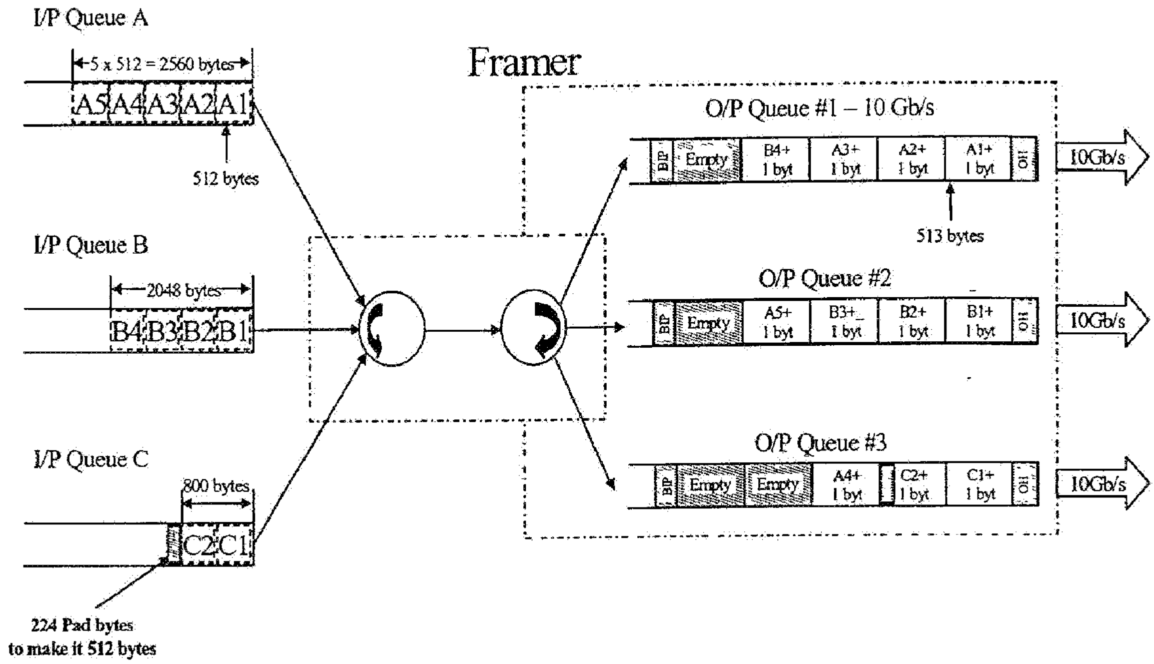


Figure 16 3 input 3 output payload formation example

Smith teaches the following in Figs. 2 and 3:

Figure 2

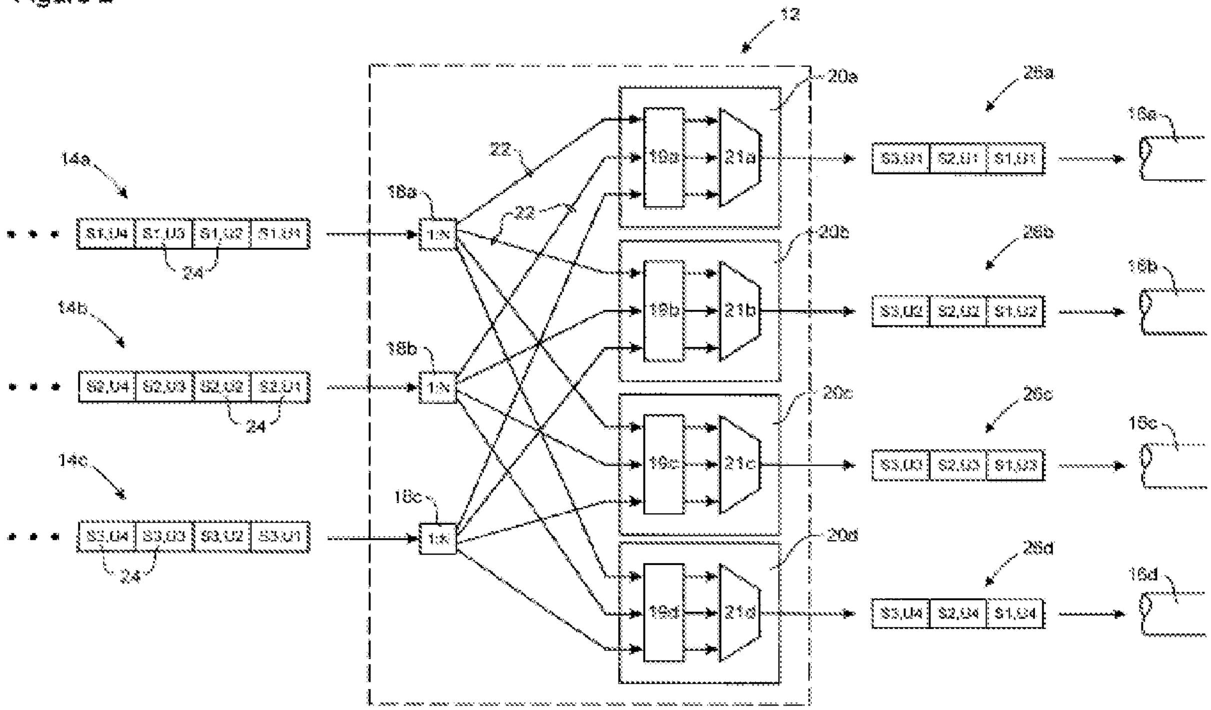
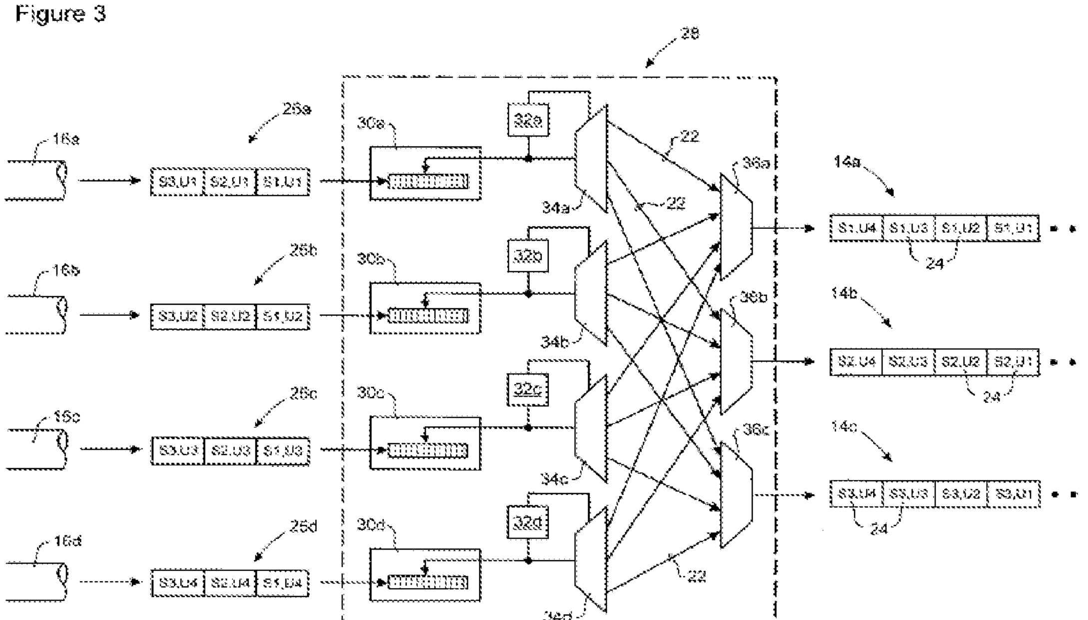


Figure 3



Also Smith teaches at col. 6, line 55-col. 7, line 21, "The signal distribution process described above with respect to FIG. 2 is fully reversible to recover the original data signals 14. FIG. 3 is a block diagram of a signal recovery unit 28, which is implemented in each receiving end node 4a e. The signal recovery unit 28 shown in FIG. 3 can be implemented in hardware and/or software downstream of conventional optical demultiplexing and opto/electrical conversion circuits, which operate to optically demultiplex the channels 16a d from a fiber link 6, and convert each composite data-stream 26a d into electronic form for processing. Conventional clock recovery and signal regeneration circuits (not shown) may also be implemented upstream of the signal recovery circuit 28 shown in FIG. 3.

The signal recovery unit 28 generally includes at least N parallel elastic buffers 30a d, each of which is arranged to receive a respective composite data-stream 26 from one of the channels 16. The elastic buffers 30a d cooperate to de-skew the composite data-streams 26a d, and thus compensate for propagation delay differences between each of the channels. Each of the de-skewed composite data-signals 26a d is then passed to a respective framer 32 and demultiplexor 34. **The framer 32 analyses the respective composite data-stream 26 to detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26,** and generates a synchronization signal which is used to control the operation of the respective demultiplexor 34. Using the synchronization signal, in combination with the known interleaving sequence of the interleavers 20a d, each demultiplexor 30a d operates to demultiplex its respective composite data-stream 26, to recover one sub-stream 22 of

each data signal 14. The sub-streams 22 of each data signal 14 are forwarded (one from each demultiplexor 30) to a one of M multiplexors 32a c which multiplex the sub-streams 22 to recover the respective data signals 14."

Thus as identified in the previous Office Action, Smith teaches to "detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26", as such identified by Smith as shown in Figs 2 and 3 , S1 is an input stream identifier which is a source identifier and U1 is packet identifier which is appended to the PDUs. This is exactly what the Applicant has indicated , which is the source identifier for PDUs is nothing but "Q-IDs.").

Because York and Smith teaches decomposing input datastreams, one incorporating the invention for " decomposing an input datastream" and the other incorporating the invention for "decomposing the plurality of input datastreams."

The difference of the invention lays into the inventive component they use, "Data Splitter" of York and "The signal distributor unit " of Smith. Therefore, it would have obvious to one skilled in the art to substitute one method for the other to achieve the predictable results of decomposing the input datastream when it is just one to decompose or more than one to decompose.

Referring to claim 31,

Claim 31 is a claim to an apparatus for carrying t out the method of claim 14. Therefore claim 31 is rejected for the reasons set forth for claim 14.

Referring to claim 32,

Claim 32 is a claim to an apparatus for carrying t out the method of claim 15. Therefore claim 32 is rejected for the reasons set forth for claim 15.

Referring to claim 33,

Claim 33 is a claim to an apparatus for carrying t out the method of claim 16. Therefore claim 33 is rejected for the reasons set forth for claim 16.

Referring to claim 34,

York teaches the apparatus of claim 30, further comprising a second sub-stream management device (Fig. 1, elements, 102, 104, 106, 108, 110A…..110N, 112A…..112N), comprising an input configured to receive said input datastream(Fig. 1, elements, 102, 104, 106, 108, 110A…..110N, 112A…..112N), and a plurality of outputs(Fig. 1, elements, 102, 104, 106, 108, 110A…..110N, 112A…..112N), wherein each of said outputs is configured to output one of said sub-streams (Fig. 1, elements, 102, 104, 106, 108, 110A…..110N, 112A…..112N),; and an underlying network infrastructure, communicatively coupled to said first and said second sub-stream management devices, and comprising said channels(col. 5, line 4-17, "During network connection setup, the dam splitter interrogates each logical path to determine the allowable maximum data packet size permitted by the underlying physical transport system. By design convention, the data splitter selects one of the logical connections as the first connection to the other host computer. This connection is established first and involves the sending of greetings and setup parameters between the data splitter and the data packet reassembly unit. Setup parameters include the number and exact identity of logical channels which will be used and the ordering of logical channels as

will be used during the data transmission phase of data transfer. This is important as the data reassembly unit must have the identical number of logical channels as the transmission side and it must use them in the identical order to the transmit side. “).

Referring to claim 35,

York teaches the apparatus of claim 34, further comprising

a first protocol processor, coupled to said input (col. 3, line 55-57, “It is assumed that each transmitter are capable of sending packets of data to a receiver with data integrity checks and employ data compression if so configured.” (Fig. 2, 210 and 212); a second protocol processor, coupled to said output; and wherein, the first and second protocol processors each comprise a protocol stack. (Fig. 1, elements 104 and 122 both including 108 and 118).

Referring to claim 36,

York teaches the method of claim 1 wherein selecting the selected one of a plurality of channels comprises: using a simple round-robin technique to choose an available one of the plurality of channels (col. 1, line 58-col. 2, line3, “Data is sent to the array of transmitters in round-robin fashion such that the data is first presented to the first transmitter, then to the second transmitter, and so on until each transmitter has been sent a packet, then the first transmitter is sent another, and so on, until all data packets have been sent to a transmitter. Each data transmitter processes packets and transmits them sequentially to one or more data receivers. There may be more than one physical media between the transmitters and receivers, or a single transmission link

may be used with all data substreams being multiplexed together. As each substream is marked with its unique identity, all data packets in a given substream have the identity of the substream.")

Referring to claim 36,

York teaches the apparatus of Claim 24 wherein selecting the selected one of the plurality of outputs comprises: using a simple round-robin technique to choose an available one of the plurality of outputs (col. 4, line 34-41, "Next, in step 216, the substream reassembly unit 118, polls each receiver queue 116 for data packets. Receiver queues 116 are polled in the same prearranged order as the round robin method described earlier. Then, the substream reassembly unit 118 reassembles the packets into a final output stream and is sent to FIFO 120 (typically the same size as FIFO 106) via bus 119. Then in step 218, the host processor 122 reads the continuous data stream.")

Claim Rejections - 35 USC § 102

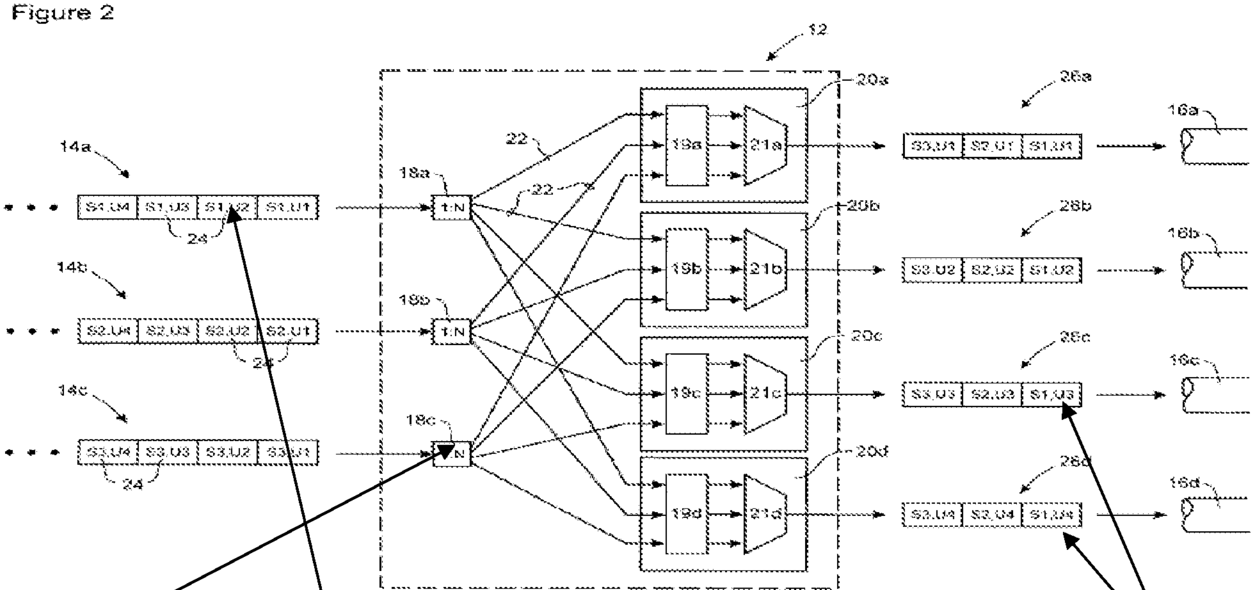
5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
A person shall be entitled to a patent unless-

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 13, 24 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith et al. (hereinafter Smith) (US 7, 149, 432 B1).

Referring to claim 1, Smith teaches a method for transporting information over a network comprising:

Figure 2



decomposing an input datastream of a plurality of input datastreams into a plurality of sub-streams,

wherein said decomposing comprises placing a portion of the input datastream into one of a plurality of queues, forming the portion of the input datastream using one or more payload data units (PDUs) each comprising a predetermined amount of data, forming each PDU by selecting the predetermined amount of data from the input datastream, and appending to each PDU a source identifier identifying the source of the input datastream and each queue of the plurality of queues corresponds to a corresponding channel of a plurality of channels; and communicating said sub-streams between a first network element and a second network element of said network by transporting each one of said sub- streams over the corresponding channel, wherein a transmission rate of said input datastream is greater than a maximum transmission rate of any one of said channels, and said communicating comprises forming a data frame comprising one or more PDUs and the appended source identifiers for each PDU and transmitting the data frame over the corresponding channel. (Col. 5, line 5-col. 7, line 55, col. 5, line 18-27, “The channels 16 can then be routed through conventional signal transmission circuits (not shown) which perform electro/optical conversion and optical multiplexing of the channels 16 into the fiber links 6a e in a manner known in the art. For example, known signal multiplexing methods may be utilized to multiplex the channels 16 onto respective different wavelengths within the same WDM or DWDM fiber, respective wavelengths within two or more WDM or DWDM fibers, or respective single-wavelength fibers.”)

<u>Examiner notes that the source identifier for PDUs is nothing but "Q-IDs."</u> Which is illustrated on page 19 of 60/ 270, 444 as follows:

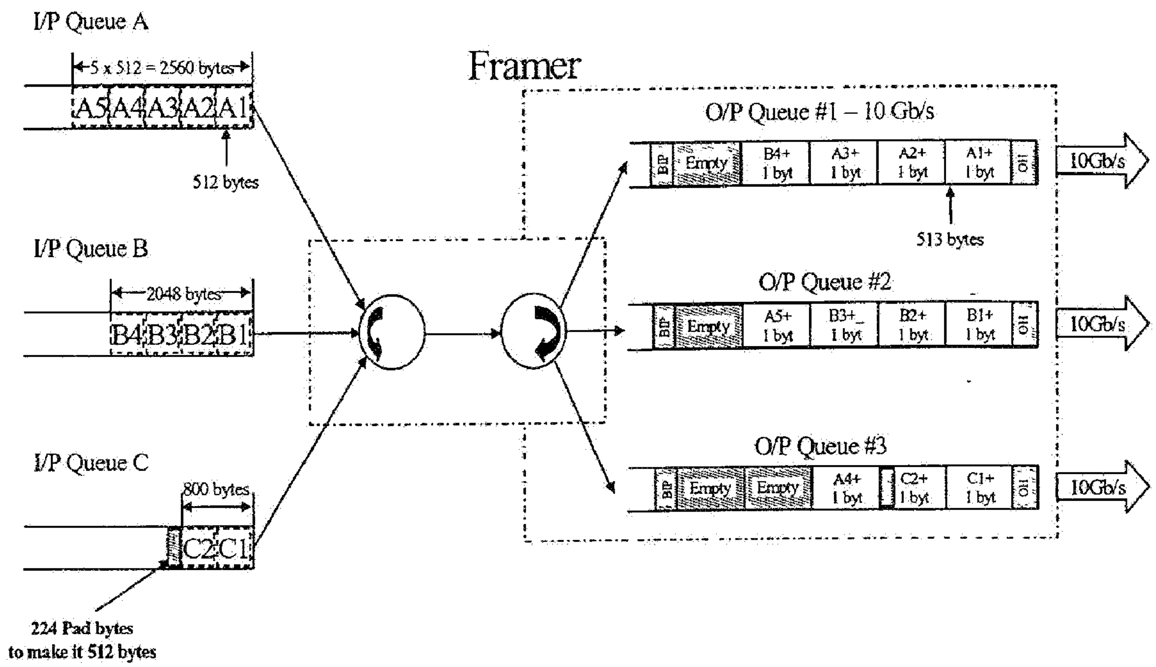


Figure 16 3 input 3 output payload formation example

Smith teaches the following in Figs. 2 and 3:

Figure 2

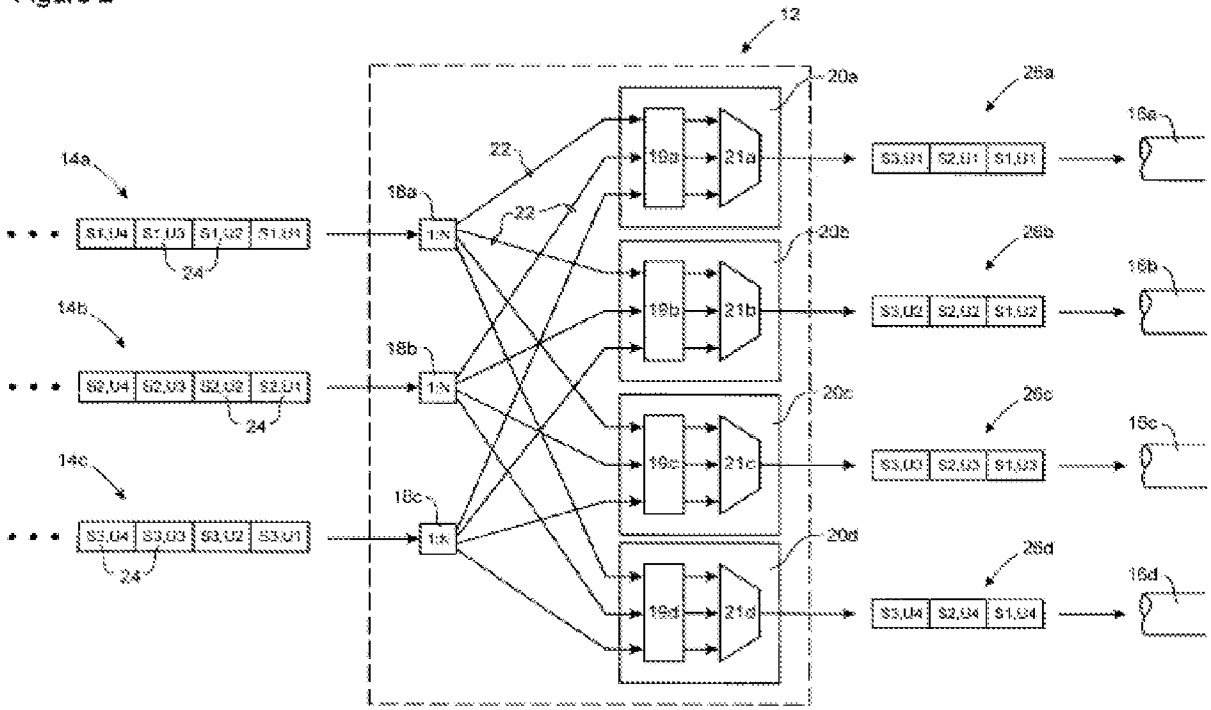
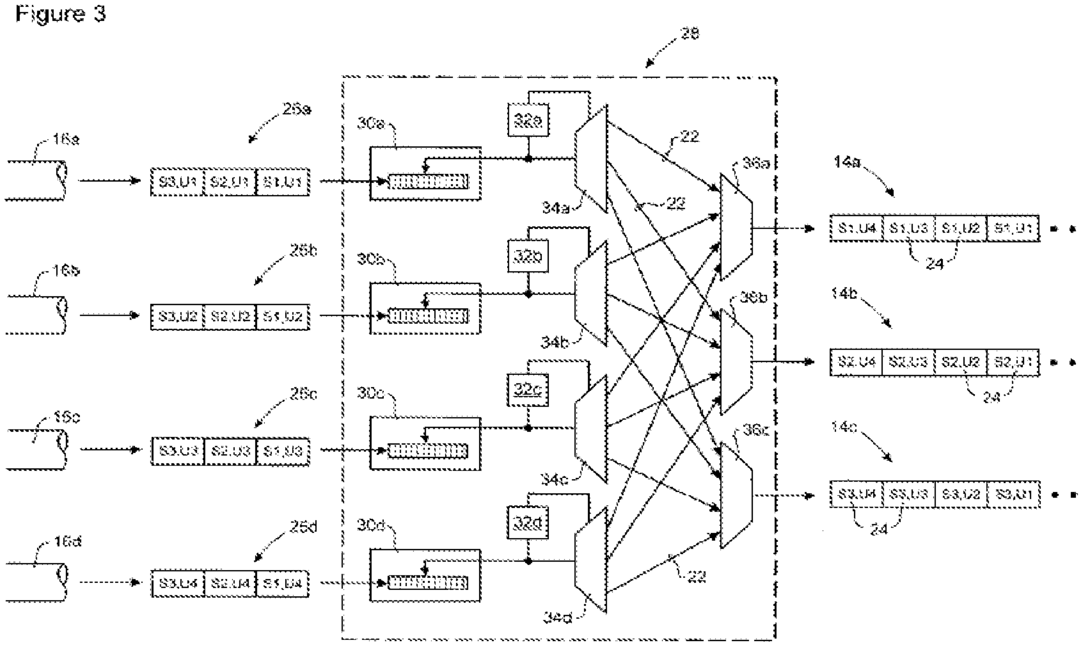


Figure 3



Also Smith teaches at col. 6, line 55-col. 7, line 21, “The signal distribution process described above with respect to FIG. 2 is fully reversible to recover the original data signals 14. FIG. 3 is a block diagram of a signal recovery unit 28, which is implemented in each receiving end node 4a e. The signal recovery unit 28 shown in FIG. 3 can be implemented in hardware and/or software downstream of conventional optical demultiplexing and opto/electrical conversion circuits, which operate to optically demultiplex the channels 16a d from a fiber link 6, and convert each composite data-stream 26a d into electronic form for processing. Conventional clock recovery and signal regeneration circuits (not shown) may also be implemented upstream of the signal recovery circuit 28 shown in FIG. 3.

The signal recovery unit 28 generally includes at least N parallel elastic buffers 30a d, each of which is arranged to receive a respective composite data-stream 26 from one of the channels 16. The elastic buffers 30a d cooperate to de-skew the composite data-streams 26a d, and thus compensate for propagation delay differences between each of the channels. Each of the de-skewed composite data-signals 26a d is then passed to a respective framer 32 and demultiplexor 34. **<u>The framer 32 analyses the respective composite data-stream 26 to detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26,</u>** <u>and generates a synchronization signal which is used to control the operation of the respective demultiplexor 34. Using the synchronization signal, in combination with the known interleaving sequence of the interleavers 20a d, each demultiplexor 30a d operates to demultiplex its respective composite data-stream 26, to recover one sub-stream 22 of</u>

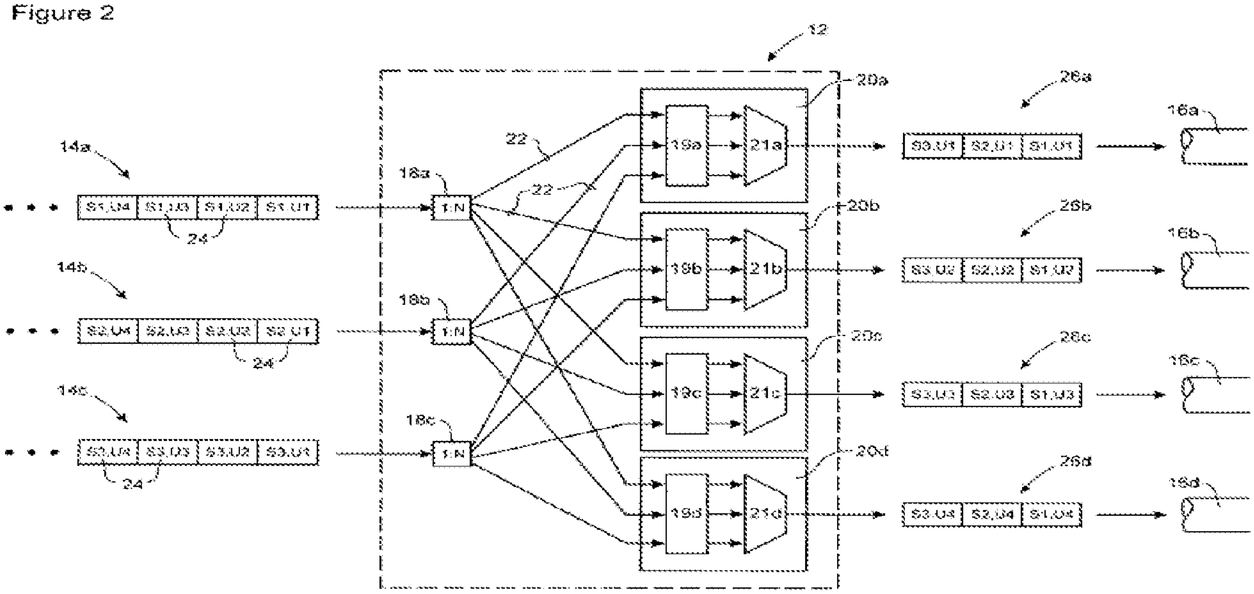
each data signal 14. The sub-streams 22 of each data signal 14 are forwarded (one from each demultiplexor 30) to a one of M multiplexors 32a c which multiplex the sub-streams 22 to recover the respective data signals 14."

Thus as identified in the previous Office Action, Smith teaches to "detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26", as such identified by Smith as shown in Figs 2 and 3 , S1 is an input stream identifier which is a source identifier and U1 is packet identifier which is appended to the PDUs. This is exactly what the Applicant has indicated , which is the source identifier for PDUs is nothing but "Q-IDs."

Referring to claim 13,

Smith teaches a method for receiving information (Fig.3) over a network comprising:

Figure 2



receiving a plurality of sub-streams, wherein said sub-streams are created by decomposing an input datastream of.....a plurality of input datastreams into said sub-streams, wherein said decomposing comprises placing a portion of the input datastream into one of a plurality of queues, forming the portion of the input datastream using one or more payload data units (PDUs) each comprising a predetermined amount of data, forming each PDU by selecting the predetermined amount of data from the input datastream, and appending to each PDU a source identifier identifying source of the input datastream~ and each queue of the plurality of queues corresponds to a corresponding channel of a plurality of channels, and each of said sub-streams is transported over said network on the corresponding channel, wherein said transporting comprises forming a data frame comprising one or more PDUs and the appended source identifier for each PDU and transmitting the data frame over the corresponding channel~ and a transmission rate of said input datastream is greater than a maximum transmission rate of any one of said channels; and assembling said sub-streams into a reconstructed output datastream. (Col. 5, line 5-col. 7, line 55, col. 5, line 18-27, "The channels 16 can then be routed through conventional signal transmission circuits (not shown) which perform electro/optical conversion and optical multiplexing of the channels 16 into the fiber links 6a e in a manner known in the art. For example, known signal multiplexing methods may be utilized to multiplex the channels 16 onto respective different wavelengths within the same WDM or DWDM fiber, respective wavelengths within two or more WDM or DWDM fibers, or respective single-wavelength fibers.")

Examiner notes that the source identifier for PDUs is nothing but "Q-IDs." Which

is illustrated on page 19 of 60/ 270, 444 as follows:

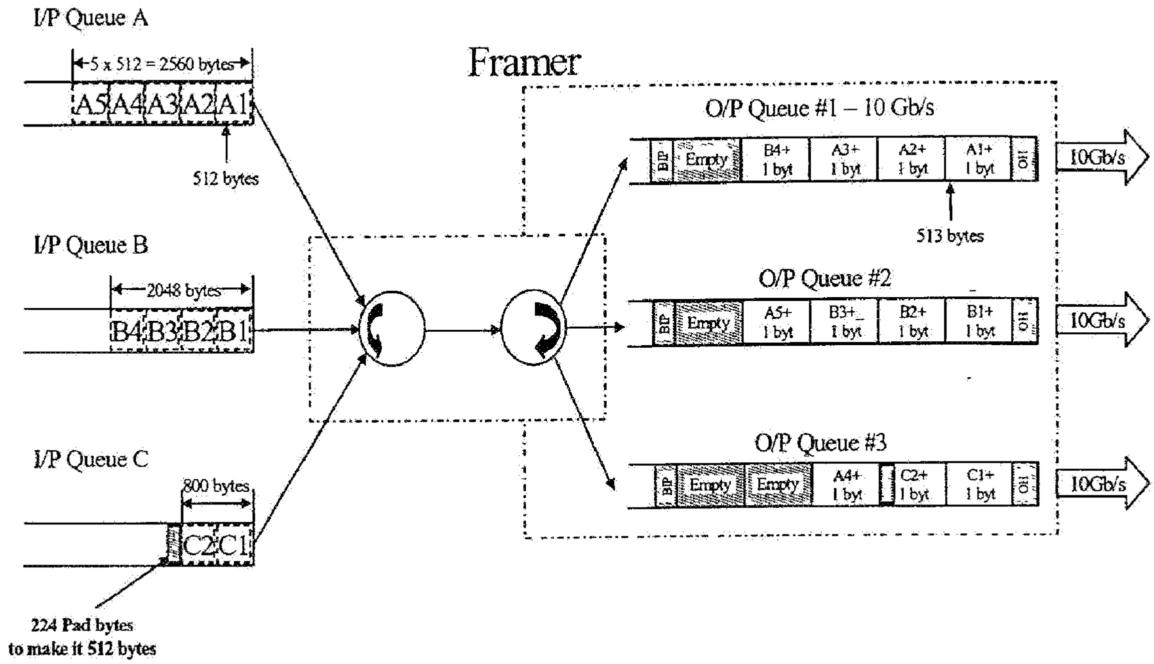


Figure 16 3 input 3 output payload formation example

Smith teaches the following in Figs. 2 and 3:

Figure 2

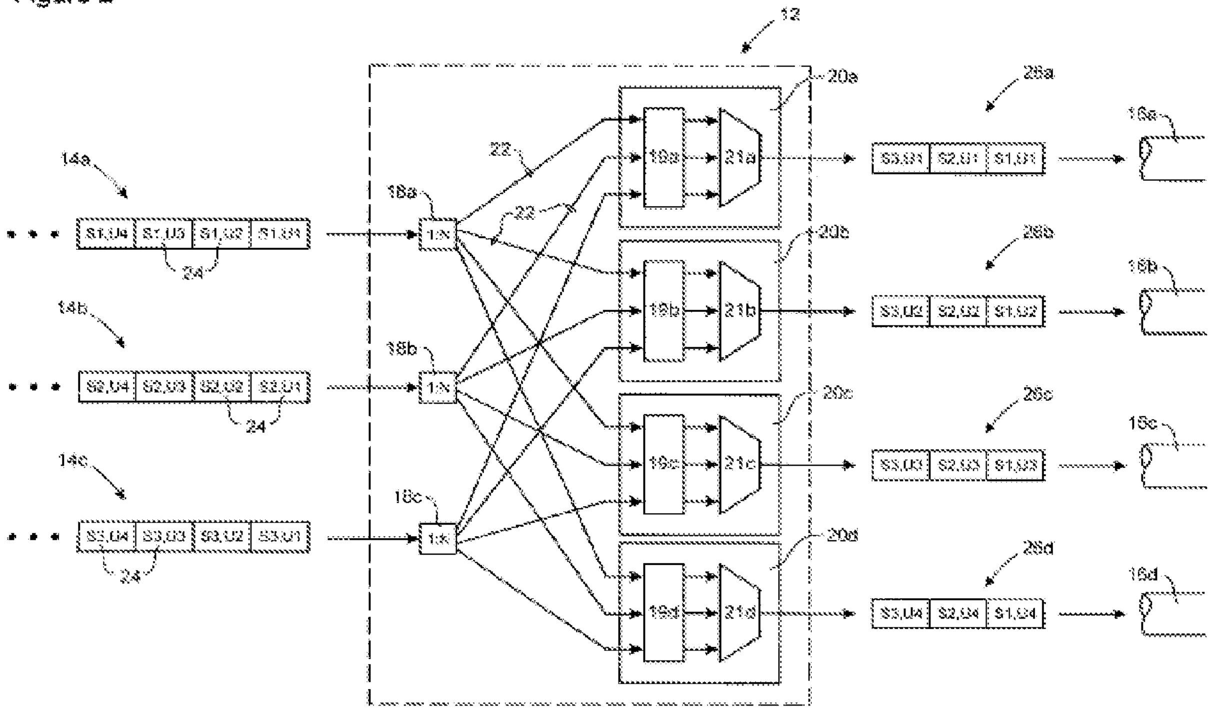
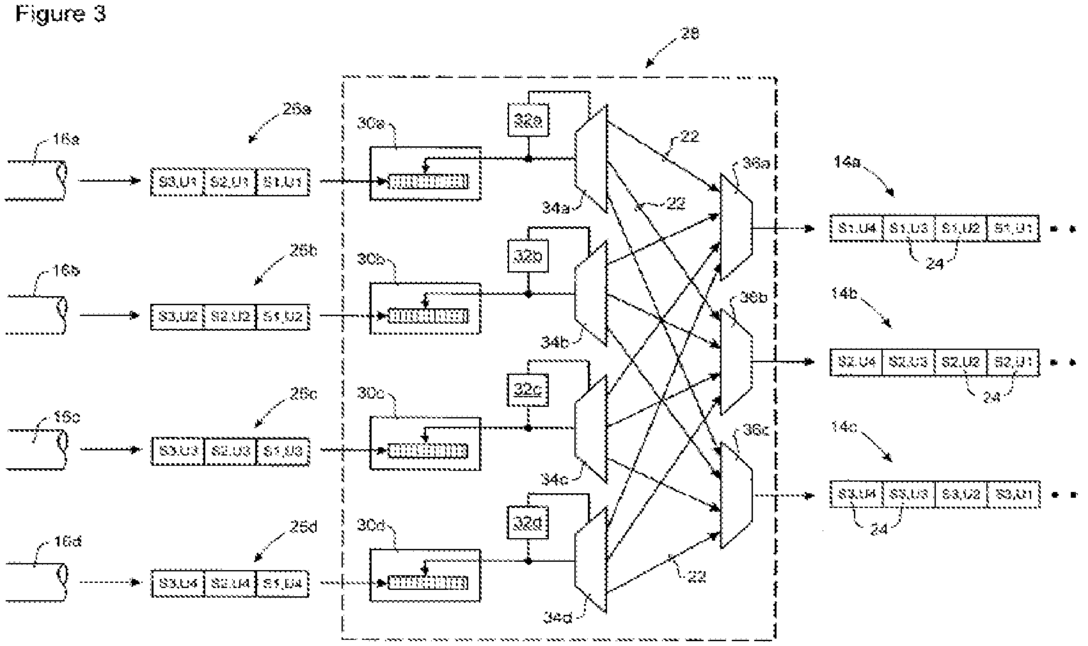


Figure 3



Also Smith teaches at col. 6, line 55-col. 7, line 21, “The signal distribution process described above with respect to FIG. 2 is fully reversible to recover the original data signals 14. FIG. 3 is a block diagram of a signal recovery unit 28, which is implemented in each receiving end node 4a e. The signal recovery unit 28 shown in FIG. 3 can be implemented in hardware and/or software downstream of conventional optical demultiplexing and opto/electrical conversion circuits, which operate to optically demultiplex the channels 16a d from a fiber link 6, and convert each composite data-stream 26a d into electronic form for processing. Conventional clock recovery and signal regeneration circuits (not shown) may also be implemented upstream of the signal recovery circuit 28 shown in FIG. 3.

The signal recovery unit 28 generally includes at least N parallel elastic buffers 30a d, each of which is arranged to receive a respective composite data-stream 26 from one of the channels 16. The elastic buffers 30a d cooperate to de-skew the composite data-streams 26a d, and thus compensate for propagation delay differences between each of the channels. Each of the de-skewed composite data-signals 26a d is then passed to a respective framer 32 and demultiplexor 34. **The framer 32 analyses the respective composite data-stream 26 to detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26,** and generates a synchronization signal which is used to control the operation of the respective demultiplexor 34. Using the synchronization signal, in combination with the known interleaving sequence of the interleavers 20a d, each demultiplexor 30a d operates to demultiplex its respective composite data-stream 26, to recover one sub-stream 22 of

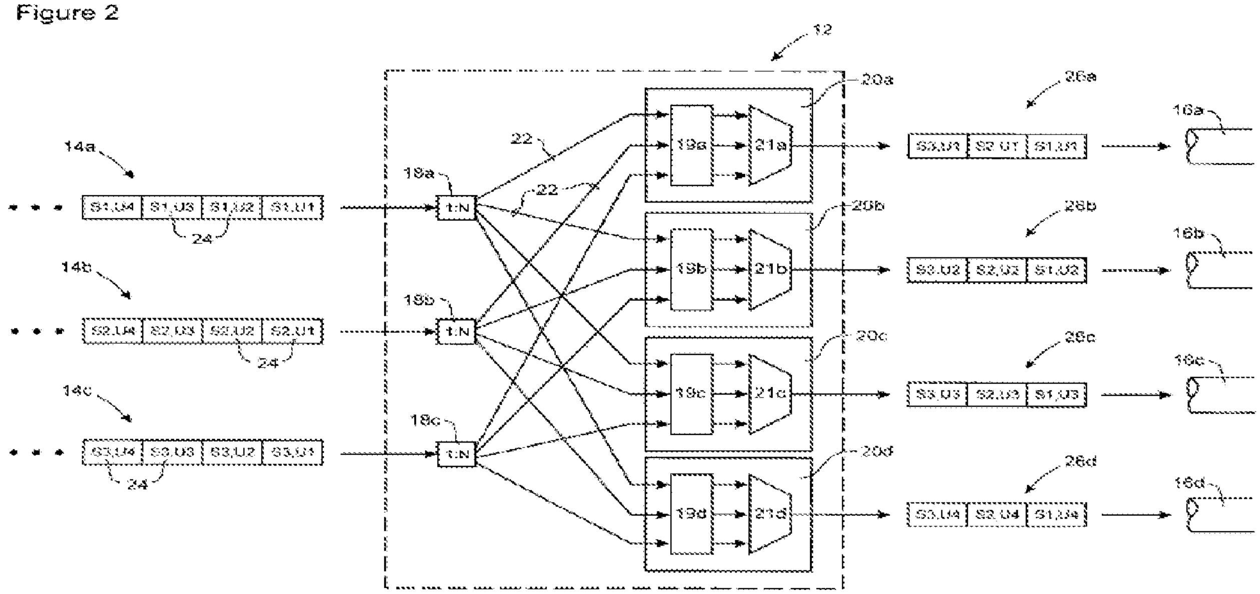
<u>each data signal 14. The sub-streams 22 of each data signal 14 are forwarded (one from each demultiplexor 30) to a one of M multiplexors 32a c which multiplex the sub-streams 22 to recover the respective data signals 14."</u>

Thus as identified in the previous Office Action, Smith teaches to "detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26", as such identified by Smith as shown in Figs 2 and 3 , S1 is an input stream identifier which is a source identifier and U1 is packet identifier which is appended to the PDUs. This is exactly what the Applicant has indicated , which is the source identifier for PDUs is nothing but "Q-IDs."

Referring to claim 24,

Smith teaches an apparatus for transporting information (Fig. 2 and Fig.3) over a network comprising:

Figure 2

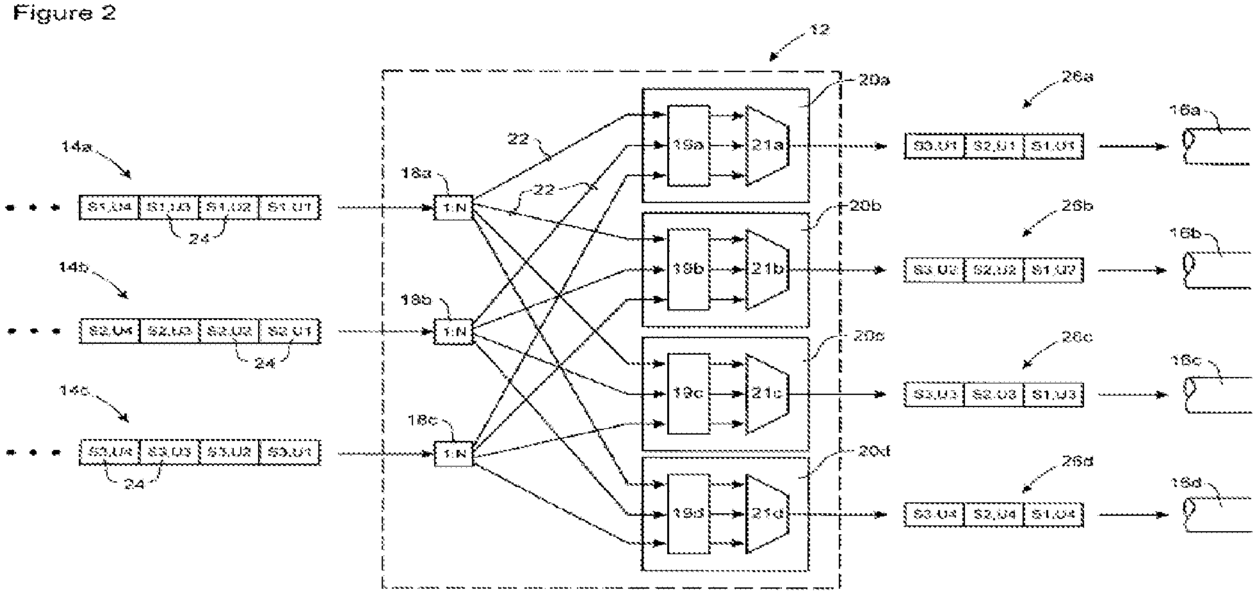


a first sub-stream management device, comprising an input configured to receive an input datastream of a plurality **of input** datastreams, and a plurality of outputs, wherein each of said outputs is configured to output one of a plurality of sub-streams, wherein the input datastream is decomposed to form the plurality of sub-streams, wherein said decomposing comprises placing a portion of the input datastream into one of the plurality of queues, forming the portion of the input datastream using one or more payload data units (PDUs) each comprising a predetermined amount of data, forming each PDU by selecting the predetermined amount of data from the input datastream, and appending to each PDU a source identifier identifying the source of the **input** datastream, **and** each of the plurality of queues corresponds to a corresponding channel of a plurality of channels, each of said sub-streams is transported over said network on the corresponding channel, wherein said transporting comprises forming a data frame comprising one or more PDUs and the appended source identifier for each PDU and transmitting he data frame over the corresponding channel, and a transmission rate of said input datastream is greater than a maximum transmission rate of any one of said channels. (Col. 5, line 5-col. 7, line 55, col. 5, line 18-27, "The channels 16 can then be routed through conventional signal transmission circuits (not shown) which perform electro/optical conversion and optical multiplexing of the channels 16 into the fiber links 6a e in a manner known in the art. For example, known signal multiplexing methods may be utilized to multiplex the channels 16 onto respective different wavelengths within the same WDM or DWDM fiber, respective wavelengths within two or more WDM or DWDM fibers, or respective single-wavelength fibers.")

Referring to claim 30,

Smith teaches an apparatus for transporting information (Fig. 2 and Fig.3) over a network comprising:

Figure 2



a first sub-stream management device, comprising an output configured to output a reconstructed output datastream, and a plurality of inputs, wherein each of said inputs is configured to receive one of a plurality of sub-streams, said sub-streams are created by decomposing an input datastream of a plurality of input datastreams into said sub-streams, wherein said decomposing comprises placing a portion of the input datastream into one of a plurality of queues, forming the portion of the input datastream using one or more payload data units (PDUs) each comprising a predetermined amount of data, forming each PDU by selecting the predetermined amount of data from the input datastream, and appending to with each PDU a source identifier identifying the source of the input datastream, and each queue of the plurality of queues corresponds to a corresponding channel of a plurality of channels, each of said sub-streams is transported over said network on the corresponding channels~ wherein said transporting comprises forming a data frame comprising one or more PDUs and the appended source identifier for each PDU and transmitting the data frame over the corresponding channel, and a transmission rate of said input datastream is greater than a maximum transmission rate of any one of said channels.

(Col. 5, line 5-col. 7, line 55, col. 5, line 18-27, “The channels 16 can then be routed through conventional signal transmission circuits (not shown) which perform electro/optical conversion and optical multiplexing of the channels 16 into the fiber links 6a e in a manner known in the art. For example, known signal multiplexing methods may be utilized to multiplex the channels 16 onto respective different wavelengths within the same WDM or DWDM fiber, respective wavelengths within two or more WDM or DWDM fibers, or respective single-wavelength fibers.”)

<u>Examiner notes that the source identifier for PDUs is nothing but "Q-IDs."</u> Which is illustrated on page 19 of 60/ 270, 444 as follows:

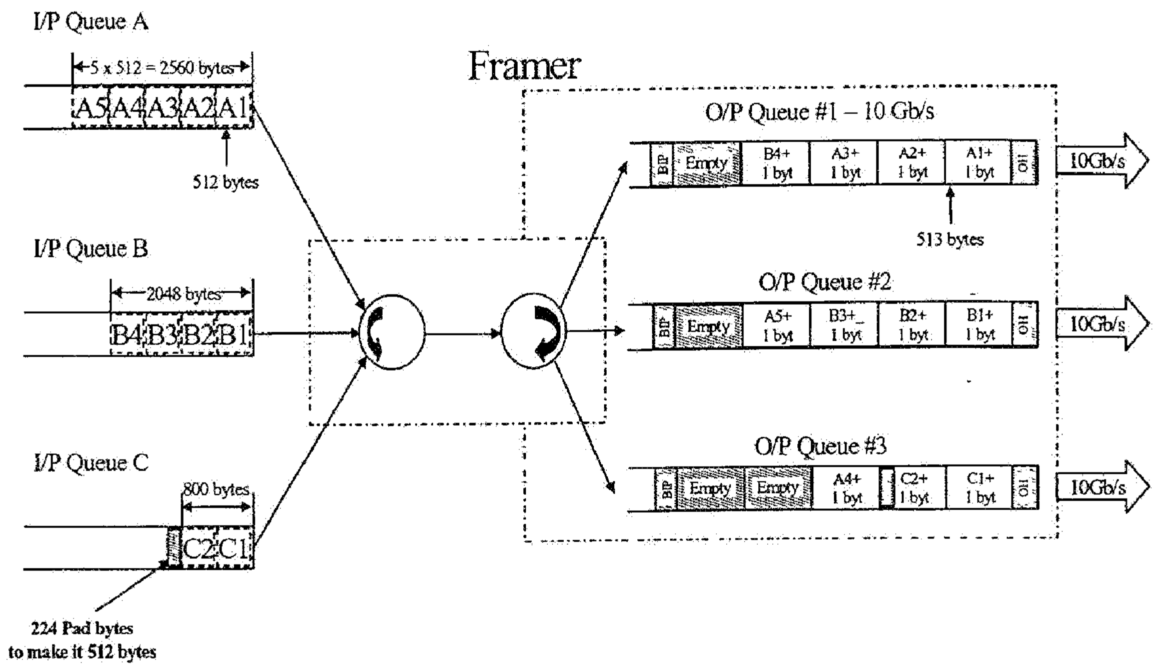


Figure 16 3 input 3 output payload formation example

Smith teaches the following in Figs. 2 and 3:

Figure 2

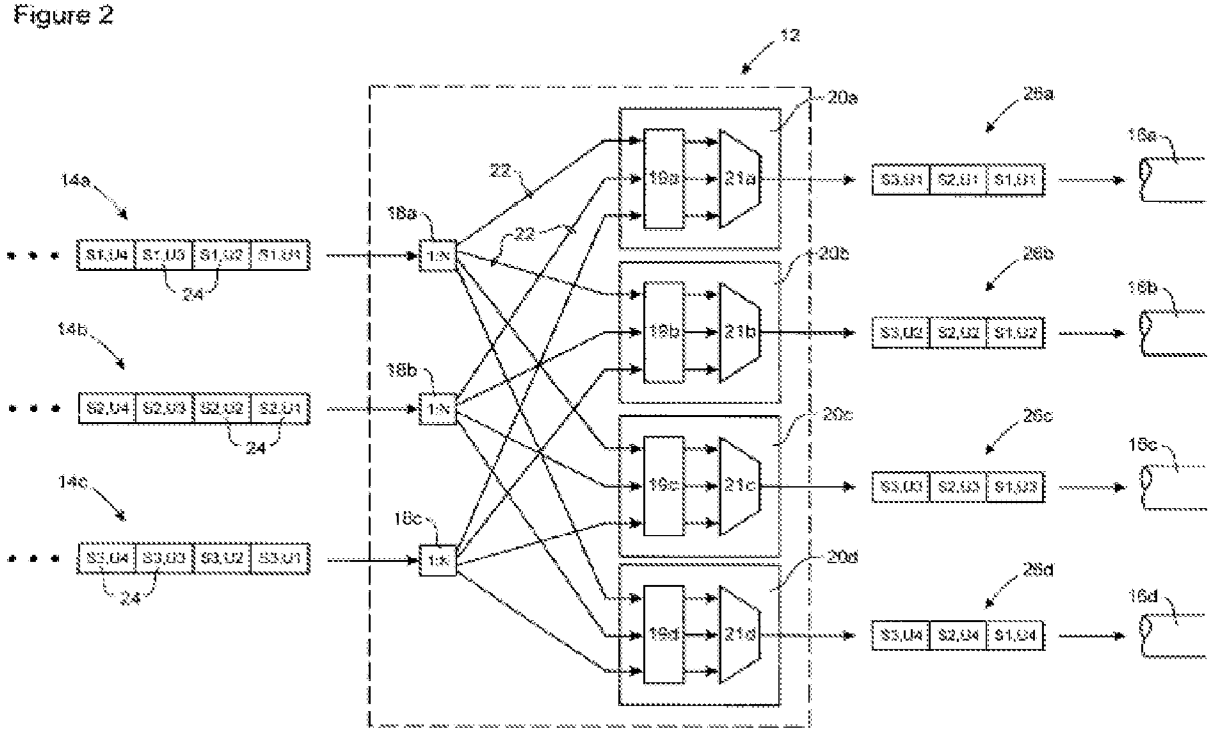
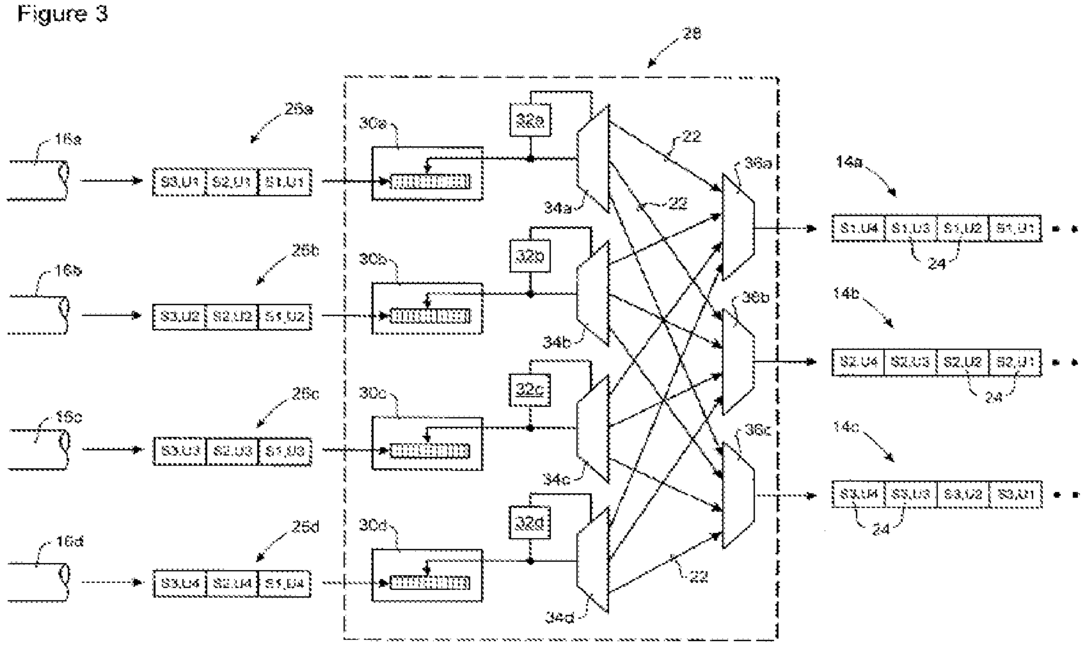


Figure 3



Also Smith teaches at col. 6, line 55-col. 7, line 21, “The signal distribution process described above with respect to FIG. 2 is fully reversible to recover the original data signals 14. FIG. 3 is a block diagram of a signal recovery unit 28, which is implemented in each receiving end node 4a e. The signal recovery unit 28 shown in FIG. 3 can be implemented in hardware and/or software downstream of conventional optical demultiplexing and opto/electrical conversion circuits, which operate to optically demultiplex the channels 16a d from a fiber link 6, and convert each composite data-stream 26a d into electronic form for processing. Conventional clock recovery and signal regeneration circuits (not shown) may also be implemented upstream of the signal recovery circuit 28 shown in FIG. 3.

The signal recovery unit 28 generally includes at least N parallel elastic buffers 30a d, each of which is arranged to receive a respective composite data-stream 26 from one of the channels 16. The elastic buffers 30a d cooperate to de-skew the composite data-streams 26a d, and thus compensate for propagation delay differences between each of the channels. Each of the de-skewed composite data-signals 26a d is then passed to a respective framer 32 and demultiplexor 34. **The framer 32 analyses the respective composite data-stream 26 to detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26,** and generates a synchronization signal which is used to control the operation of the respective demultiplexor 34. Using the synchronization signal, in combination with the known interleaving sequence of the interleavers 20a d, each demultiplexor 30a d operates to demultiplex its respective composite data-stream 26, to recover one sub-stream 22 of

each data signal 14. The sub-streams 22 of each data signal 14 are forwarded (one from each demultiplexor 30) to a one of M multiplexors 32a c which multiplex the sub-streams 22 to recover the respective data signals 14."

Thus as identified in the previous Office Action, Smith teaches to "detect the sub-stream identifiers of each of the sub-streams 22 contained in the composite data-stream 26", as such identified by Smith as shown in Figs 2 and 3 , S1 is an input stream identifier which is a source identifier and U1 is packet identifier which is appended to the PDUs. This is exactly what the Applicant has indicated , which is the source identifier for PDUs is nothing but "Q-IDs."

Conclusion

Examiner's note: Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ASHOK B. PATEL whose telephone number is (571)272-3972. The examiner can normally be reached on 6:30 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan A. Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Ashok B. Patel/
Examiner, Art Unit 2154